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ORIGINAL ARTICLES.

THE BLOOD-ALTERATIONS OF ETHER-ANESTHESIA.[1]

BY JOHN CHALMERS DA COSTA, M.D.,
DEMONSTRATOR OF SURGERY IN THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

UNCONSCIOUSNESS is the dethronement of the reigning forces of the nervous system and the destruction of all central authority, the reduction of cerebral activity to basic and fundamental elements, and the annihilation of the higher psychomotor activities. In other words, unconsciousness is the state of automatic and uncontrolled activity of individual nerve-elements. Artificially induced unconsciousness is known as anesthesia. The anesthetic state may be produced by a sudden diminution of the amount of blood in the brain, as is seen after severe hemorrhages. The knowledge of this fact was utilized in the French hospitals before the days of ether and chloroform, the surgeons producing anemia of the brain by suddenly lifting a man into an erect position from a recumbent posture; the state of anesthesia thus induced permitting the performance of slight operations. Diminution of the blood-supply of the brain by ligation of the carotid artery may produce the same effect. Furthermore, it has long been recognized that partial anesthesia follows forcible and rapid respiration, probably as a result of anemia of the brain.

Anesthesia may be produced by alteration in the composition of blood and the carrying in this fluid of certain extraneous materials to the nerve-centers. This form of anesthesia is exhibited in the carbonic-acid narcosis, in which condition, the internal respiration is diminished and the activity of the cerebral cells is depressed or destroyed. Another example of anesthesia by alteration in the composition of the blood is seen in the inhalation of ether or chloroform.

For almost fifty years ether has been under scientific investigation, and it is generally agreed that it acts on the nervous system as does alcohol, only far more rapidly. When given by inhalation there are four stages of anesthesia:

1. The stage of stimulation, characterized by excitment and a pleasing intoxication.

2. The anodyne stage, characterized by impaired sensation, retained reflexes, delirium, which is most marked in robust individuals, tetanic contraction of the muscles, turgescence of the face, etc.

3. The anesthetic stage, characterized by the abolition of the ordinary reflexes and of all conscious excito-motor sensibility.

4. The paralytic stage, characterized by diminution of unconscious excito-motor sensibilities, and, finally, by death from paralysis of the respiratory center.

The condition of anesthesia is thought by most observers to be due to the passage of ether into the blood and the subsequent direct action of this drug upon the nerve-elements. Prevost has sought to prove this by a well-known experiment. He produced unconsciousness in a frog by the direct application of the drug to the cerebrum after first tying the aorta to prevent the washing away of the agent by the force of the circulation. The defect in his experiment is the fact that the ligation of the aorta alone, by depriving the brain of blood, might be responsible for the unconsciousness.

It seems highly probable, from a series of observations I am about to submit, that the cause of the anesthetic state is not merely the direct action of ether upon the nerve-elements, but involves likewise an alteration in the composition of the blood. It is a well-known fact that slow, chronic, advancing nutritive failure of the brain is first manifest in the decay of the higher and most unstable faculties, which are the last products of evolutionary advance, and that the last faculties to suffer are those that are purely automatic. Consciousness is not lost early in these conditions, because cells producing cerebral activities, of which consciousness manifests the sum, have time in chronic failures to adjust themselves to their altering environment.

We notice this course of events in general paralysis of the insane; the higher faculties of memory, of will, of judgment, of abstraction, and of attention are lost first. Attacks of loss of consciousness due to sudden and limited nutritive failures from congestions or capillary hemorrhages come upon the scene; the emotions are altered, perverted and uncontrolled, and finally, if life be sufficiently prolonged, all faculties but the purely automatic are destroyed and the individual passes into a condition exactly comparable to the coma of alcoholic intoxication or to the anesthetic state induced by ether.

Any condition that suddenly alters the composition of the blood must prevent nutrition, retard

[1] A contribution from the Kyle-Da Costa Laboratory, Philadelphia.

the removal of waste products, and fix the molecules of nerve-matter, and may thus produce temporarily a condition analogous to the persistent state of mental deterioration. Diminution in the amount of blood in the brain is known to produce this condition. Altered composition is known to have a like effect, as when the blood holds carbon dioxid in large amounts; and yet in ether-anesthesia, neither diminished quantity of blood in the brain nor the presence of carbon dioxid in the blood serves to explain all of the observed phenomena. It seems evident that altered nutrition and a failure to remove waste products might depend upon the absence of proper oxygenation as well as upon the presence of carbon dioxid. Diminished capacity for oxygenation means diminished amount of oxygen in the blood; and lessened amount of oxygen means a lessened amount of the oxygen-bearing element, that is, of hemoglobin. Diminished amount of hemoglobin suddenly brought about would theoretically cause malnutrition and unconsciousness, and if this condition is found to maintain in the anesthetic state we can account for the prolonged depression induced in some by the inhalation of ether, and for other conditions that have previously lacked comprehensive explanation.

That the diminution of the amount of oxyhemoglobin does tend to produce unconsciousness is shown by the drowsiness, the heaviness, and the tendency to syncope shown by sufferers from chlorosis, by the almost comatose condition of the victims of Winckel's disease, and by the abolition of sensibility of rabbits and guinea-pigs in which this disease has been artificially produced, and yet in these conditions the alteration of blood-composition is rather gradual than sudden.

The following observation will show that diminution in hemoglobin is constant after the inhalation of ether; that the diminution is rapid and marked, is accompanied by alteration in the shape of the corpuscles, but by no marked diminution in their number. This diminution in the amount of hemoglobin is so pronounced in the anemic as to give conclusive evidence of the reason why reaction in these cases is often so difficult and the effect of the anesthetic so persistent and prolonged.

The exact mode in which the hemoglobin is removed from the corpuscles is questionable. Practically we know that if blood outside of the body is subjected to a low temperature, and subsequently warmed, the coloring-matter of the corpuscles passes into the blood-liquor. Theoretically we may assume that the rapid evaporation of ether in the air-cells of the lungs produces great cold, and that the blood circulating through the rest of the body becomes subsequently warmed, and the hemoglobin is thus removed.

This theory finds apparent confirmation in the rapid lowering of temperature induced by anesthetics, a lowering that begins with the anodyne stage, and that may reach the extent of four or five degrees. In the cases in which I have made studies of temperature the average fall was found to be from one to three degrees, a fall separated from the fall of shock by the fact of the rapid ascent of the temperature on cessation of inhalation of the anesthetic.

The altered shape of the corpuscles may in part be due to the removal of the hemoglobin, and in part to the dissolving out of some of the fat which they contain. What becomes of the hemoglobin removed from the corpuscles is a question, though the occasional occurrence immediately after etherization of severe jaundice would seem to indicate that in some cases at least this pigment goes to the liver, and is there broken up. In confirmation of the foregoing views I submit twenty-nine cases in which blood-examinations have been most carefully made before, during, and after etherization.[1]

The counts were made by means of a Thoma-Zeiss hemocytometer; the hemoglobin was estimated by means of Gowers' and Fleischl's hemoglobinometers; drawings have been made from the undiluted blood, and of necessity are diagrammatic; all forms of the red corpuscles being represented by red; leukocytes, by pale-blue; lymphocytes, by dark-blue; and blood-plates by green.[2] In making the blood-counts the solutions used for dilution were the 3 per cent. salt solution and the Daland's potassium-bichromate solution.

The estimation in these cases was made just before etherization, during etherization, and after recovery from the anesthetic state. Case XIII was subjected to an estimation three days before the operation, two days before the operation, one day before and just before operation, during slight anesthesia, during profound anesthesia, in the beginning of recovery, and the day after the operation. Case XXIII died of shock after the operation of gastroenterostomy, and sufficient recovery did not follow operation to permit of estimation being made. The other cases are free from complication of shock or severe hemorrhage, and afford pure instances of ether-action. Case XIII was one of examination for stricture of the rectum, a rectal bougie was passed, and there was absolutely no hemorrhage. Case XXI was one of attempted reduction of an old inguinal hernia and was uncomplicated by bleeding. Case

[1] As the reports of the cases are largely repetitive, it seems unnecessary to reproduce the details of each. Those chosen are Nos. I, III, XIII, XIX, XXI, XXII, and XXVII. In the reprints of the article (procurable upon application) the reports of the entire series of cases are given *in extenso*.

[2] These drawings are on file in the laboratory.

XXVII was one of breaking up of an ankylosis of the finger, and was also unaccompanied by hemorrhage. Case III does not show a reduction of hemoglobin. This apparent discrepancy arises from the estimation having been made without artificial light, and report of this case is made only to maintain scientific consistency; it can be unhesitatingly rejected from the case-group. Case XIX was an alcoholic, never completely under the influence of the ether, and examination showed no apparent fall of hemoglobin, although after etherization the hemoglobin was found diminished. This was due to too early observation, the blood being taken during a period of excitement in which there were violent struggling and tumultuous respiratory efforts.

In twenty-seven cases the fall of hemoglobin is marked and unmistakable. Each case is accompanied by a report of the physical condition of the individual and a uninary examination, with a description of the blood as examined by a Leitz $\frac{1}{12}$ oil-immersion, the slide being undiluted blood.

The following cases illustrate the effect of etherization on the blood:

CASE I.—Patient, B. B., aged eighteen years. Physical examination negative. Urine examination negative. Blood-examination before etherization: Hemoglobin 65 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,000,000. Red corpuscles per cubic millimeter, normal, 3,000,000. White corpuscles per cubic millimeter, 16,500. Proportion of white to total red, 1 : 300. Proportion of white to normal red, 1 : 183. Examination of the corpuscles in the undiluted blood showed normal red, crenated red, leukocytes, and lymphocytes.

Blood-examination during etherization: Hemoglobin 60 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,120,000. Red corpuscles per cubic millimeter, normal, 600,000. White corpuscles per cubic millimeter, 10,240. Proportion of white to total red, 1 : 500 Proportion of white to normal red, 1 : 58. Examination of the undiluted blood showed appearance of corpuscles normal red, macrocytes, broken-down red corpuscles, leukocytes, lymphocytes.

Blood-examination after etherization: Hemoglobin 70 per cent. of normal. Red corpuscles per cubic millimeter, total, 4,000,000. Red corpuscles per cubic millimeter, normal, 2,500,000. White corpuscles per cubic millimeter, 16,000. Proportion of white to total red, 1 : 350. Proportion of white to normal red, 1 : 156. When examined undiluted the blood showed normal red, macrocytes, crenated red corpuscles, lymphocytes, leukocytes.

CASE III.—Patient, F. McG., aged eleven years. Physical examination negative. Urine-examination negative, except that microscopic examination showed many uric-acid crystals. Blood-examination before etherization: Hemoglobin 60 per cent. of normal. Red corpuscles per cubic millimeter, total 4,200,000. Red corpuscles per cubic millimeter, normal, 4,200,000. White corpuscles per cubic millimeter, 15,000. Proportion of white to total and normal red, 1 : 280. When examined by the $\frac{1}{12}$ oil immersion the blood presented a normal appearance.

Blood-examination during etherization: Hemoglobin 62 per cent. of normal. Red corpuscles per cubic millimeter, total 5,000,000. Red corpuscles per cubic millimeter, normal, 3,000,000. White corpuscles per cubic millimeter, 15,000, Proportion of white to total red, 1 : 333. Proportion of white to normal red, 1 : 200. On examining the undiluted blood there were found present normal red poikilocytes, blood-plates, leukocytes, and lymphocytes.

Blood-examination after etherization: Hemoglobin 65 per cent. of normal. Red corpuscles per cubic millimeter, total 4,800,000. Red corpuscles per cubic millimeter, normal, 4,600,000. White corpuscles per cubic millimeter, 15,000. Proportion of white to total red, 1 : 320. Proportion of white to normal red, 1 : 306. Microscopic examination of the blood showed a few crenated corpuscles; otherwise the blood presented a normal appearance.

CASE XIII.—Patient, B. B., aged twenty-three years. Diagnosis—stricture of the rectum. Physical examination negative. Urine-examination: specific gravity, 1022; reaction, acid; no albumin; no serum-globulin; no sugar; no bile; urea, 2.1 per cent. Microscopic, amorphous urates; squamous epithelium.

Blood-examination three days before operation: Hemoglobin 80 per cent. of normal. Red corpuscles per cubic millimeter, total 5,300,000. Red corpuscles per cubic millimeter, normal, 5,300,000. White corpuscles per cubic millimeter, 10,000 Proportion of white to total red, 1 : 512. Proportion of white to normal red, 1 : 512. Examination of the undiluted blood showed normal appearance.

Blood-examination two days before operation: Hemoglobin 80 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,120,000. Red corpuscles per cubic millimeter, normal, 5,120,000. White corpuscles per cubic millimeter, 10,000. Proportion of white to total and normal red, 1 : 512. Undiluted blood normal.

Blood-examination one day before operation: Hemoglobin 80 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,350,000. Red corpuscles per cubic millimeter, normal, 5,350,000. White corpuscles per cubic millimeter, 10,000, Proportion of white to total and normal red, 1 : 535. Undiluted blood normal.

Blood-examination just before operation: Hemoglobin 78 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,200,000. Red corpuscles per cubic millimeter, normal, 5,000,000. White corpuscles per cubic millimeter, 10,000. Proportion of white to total red, 1 : 520. Proportion of white to normal red, 1 : 500. Examination of the undiluted blood showed slight crenation of a few of the red corpuscles.

Blood-examination in early stage of etherization: Hemoglobin 72 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,400,000. Red corpuscles per cubic millimeter, normal, 5,200,000. White corpuscles per cubic millimeter, 12,000. Proportion of white to total red, 1 : 480. Proportion of white to normal red, 1 : 420. Undiluted blood showed the crenation slightly more marked.

Blood-examination during profound etherization: Hemoglobin 72 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,100,000. Red corpuscles per cubic millimeter, normal, 4,000,000. White corpuscles per cubic millimeter, 12,000. Proportion of white to total red, 1 : 425. Proportion of white to normal red, 1 : 316. The undiluted blood showed more marked crenation of red corpuscles.

Blood-examination after patient had fully returned to consciousness: Hemoglobin 68 per cent. of normal. Red corpuscles per cubic millimeter, total, 4,800,000. Red corpuscles per cubic millimeter, normal, 4,500,000. White corpuscles per cubic millimeter, 10,000. Proportion of white to total red, 1 : 480. Proportion of white to normal red, 1 : 450. The undiluted blood showed only slight irregularity of the red corpuscles.

Blood-examination one day after operation: Hemoglobin 70 per cent. of normal. Red corpuscles per

cubic millimeter, total, 4,850,000. Red corpuscles per cubic millimeter, normal, 4,850,000. White corpuscles per cubic millimeter, 10,000. Proportion of white to total and normal red, 1:485. Examination of a slide of the undiluted blood showed it to be normal.

CASE XIX.—Patient, M. A. C., female, aged forty years. Physical examination negative. Urine-examination negative.

Blood-examination before etherization: Hemoglobin 54 per cent of normal. Red corpuscles per cubic millimeter, total, 6,320,000. Red corpuscles per cubic millimeter, normal, 6,000,000. White corpuscles per cubic millimeter, 12,000. Proportion of white to total red, 1:525. Proportion of white to normal red, 1:500. Microscopic examination showed only slight crenation in a few of the red corpuscles.

Blood-examination during etherization: Hemoglobin 54 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,000,000. Red corpuscles per cubic millimeter, normal, 4,500,000. White corpuscles per cubic millimeter, 15,000. Proportion of white to total red, 1:333. Proportion of white to normal red, 1:300. The undiluted blood showed normal red, crenated red, and leukocytes.

Blood-examination after etherization: Hemoglobin 52 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,550,000. Red corpuscles per cubic millimeter, normal, 4,300,000. White corpuscles per cubic millimeter, 15,000. Proportion of white to total red, 1:370. Proportion of white to normal red, 1:285. This showed considerable alteration, there being present normal red, microcytes, irregular red, blood-plates, and leukocytes.

CASE XXI.—Patient, D. H., male, aged fifty-one years. Physical examination negative. Urine-examination negative.

Blood-examination before etherization: Hemoglobin 80 per cent. of normal. Red corpuscles per cubic millimeter, total, 4,860,000. Red corpuscles per cubic millimeter, normal, 3,500,000. White corpuscles per cubic millimeter, 10,000. Proportion of white to total red, 1:486. Proportion of white to normal red, 1:350. The undiluted blood showed normal red, microcytes, blood-plates, leukocytes, and irregular red.

Blood-examination during etherization: Hemoglobin 70 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,440,000. Red corpuscles per cubic millimeter, normal, 4,000,000. White corpuscles per cubic millimeter, 12,000. Proportion of white to total red, 1:452. Proportion of white to normal red, 1:333. Slide-examination showed normal red, crenated and irregular red, macrocytes, microcytes, and blood-plates.

Blood-examination after etherization: Hemoglobin 75 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,080,000. Red corpuscles per cubic millimeter, normal, 4,500,000. White corpuscles per cubic millimeter, 10,000. Proportion of white to total red, 1:508. Proportion of white to normal red, 1:450. Microscopic examination of the blood showed normal red, polynuclear leukocytes, irregular red, and microcytes.

CASE XXII.—Patient, C. H. S., aged sixty years. Physical examination negative. Urine-examination negative.

Blood-examination before etherization: Hemoglobin 72 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,120,000. Red corpuscles per cubic millimeter, normal, 4,800,000. White corpuscles per cubic millimeter, 15,000. Proportion of white to total red, 1:340. Proportion of white to normal red, 1:320. The undiluted blood showed, normal red, crenated red, granular leukocytes, and blood-plates.

Blood-examination during etherization: Hemoglobin 41 per cent. of normal. Red corpuscles per cubic millimeter, total, 5,400,000. Red corpuscles per cubic millimeter, normal, 2,500,000. White corpuscles per cubic millimeter, 15,000. Proportion of white to total red, 1:360. Proportion of white to normal red, 1:165. Microscopic examination of the undiluted blood showed normal red, markedly irregular red, microcytes, blood-plates, and leukocytes.

Blood-examination after etherization: Hemoglobin 68 per cent. of normal. Red corpuscles per cubic millimeter, total, 4,800,000. Red corpuscles per cubic millimeter, normal, 4,000,000. White corpuscles per cubic millimeter, 15,000. Proportion of white to total red, 1:320. Proportion of white to normal red, 1:266. Slides of the undiluted blood showed marked alteration, but less than during etherization.

CASE XXVII.—Patient, J. S., boy, aged fourteen years. Physical examination negative. Urine-examination negative. Blood examination before etherization: Hemoglobin 70 per cent. of normal. Red corpuscles per cubic millimeter, total, 6,168,000. Red corpuscles per cubic millimeter, normal, 5,200,000. White corpuscles per cubic millimeter, 8000. Proportion of white to total red, 1:770. Proportion of white to normal red, 1:605. Slides showed slight crenation of a few of the red corpuscles.

Blood-examination during etherization: Hemoglobin 55 per cent. of normal. Red corpuscles per cubic millimeter, total, 4,456,000. Red corpuscles per cubic millimeter, normal, 2,000,000. White corpuscles per cubic millimeter, 10,000. Proportion of white to total red, 1:445. Proportion of white to normal red, 1:200. The undiluted blood showed more marked crenation of the red corpuscles.

Blood-examination after etherization: Hemoglobin 60 per cent. of normal. Red corpuscles per cubic millimeter, total, 4,696,000. Red corpuscles per cubic millimeter, normal, 2,300,000. White corpuscles per cubic millimeter, 10,000. Proportion of white to total red, 1:469. Proportion of white to normal red, 1:230. The undiluted blood showed normal red, microcytes, crenated red corpuscles, leukocytes, and blood-plates.

CONCLUSIONS.—1. Etherization produces a marked diminution in the hemoglobin of the blood.

2. The red corpuscles and the hemoglobin are especially affected in blood previously diseased, in such conditions, for instance, as anemia.

3. Irregular reports are due to faulty observation, to the presence of altered hemoglobin in the blood, to the faulty aberration as to color of a Fleischl instrument or to taking the blood before anesthesia is completed.

4. The white corpuscles show irregular changes which are not characteristic, and exhibit variations not more pronounced than would be found in the same number of samples of normal blood on different examinations.

5. Age does not apparently influence the results.

6. Ether-pneumonia may possibly be due, in some instances at least, to the action of intense cold upon the lungs, produced by the action of ether-vapor.

7. Edema of the lungs may arise from contraction of the pulmonary capillaries, thus producing a loss of *vis a tergo* and damming up of blood in the veins. Furthermore, the same condition may produce sudden paralysis of the heart.

8. The often-quoted observation as to the effect upon the hemoglobin of shock and hemorrhage re-

quires enlarged repetition upon human beings before the statements can be unreservedly accepted that hemorrhage causes a great fall in the amount of hemoglobin, but that shock does not affect it.

9. The chilling of the blood-stream may be responsible for the nephritis that occasionally follows etherization.

10. Prolonged anesthesia profoundly deteriorates the blood and strongly militates against recovery; hence rapidity of operation is most desirable.

MEDICO-CHIRURGICAL NOTES ON THE WORKS OF HIPPOCRATES AND GALEN.[1]

BY R. HARCOURT ANDERSON, M.D.,
OF NEW YORK.

BACON says: "The variable composition of man's body hath made it as an instrument easy to distemper, and therefore the poets did well to conjoin music and medicine in Apollo; because the office of medicine is but to tune this curious harp of man's body and to reduce it to harmony."

From prehistoric times there have been both the medical and surgical sick, and so many have been both the methods of treatment and the cures, and the administrators of both, that, historically speaking, this subject is chaotic and indistinct; but it is always interesting to the modern medical man to speculate on the various steps which the science has taken from the primitive state to the present.

According to Herodotus, the sick among the Babylonians and Egyptians were exposed to the passers-by, who were not only expected to diagnosticate the case, but to prescribe treatment for the same, and the various diagnoses and means of cure were collected by the priests and inscribed in sacred books or upon the pillars of the holy temples (Iamblichus). In those days the priests were the possessors of all the knowledge and learning of the Egyptians, and this was written in the forty-two Hermetic Books, and these latter were only accessible to members of the priesthood. One of the earliest mentions we have of medical literature is that Athotis, son of Menes, the ancient King of Egypt, who is reported by Manetho as the author of several works on anatomy. This was probably one of the first steps toward freedom from empiric shackles.

At this age medicine was divided into three different kinds, the pharmaceutic, dietetic, and chirurgic, and these were subdivided again and again, until we wonder how there was any practical application of healing at all. The belief was held by the early Egyptians that the body could be divided into thirty-six parts, each of which was under the particular government of one of the Decans or Aerial Demons, and according to Origen, whenever any part of the body was diseased a cure was effected by invoking the demon who presided over or governed that particular part. A kind of theologico-anatomy, according to the existing beliefs at that time, can thus be made out. Somewhat after this idea was the astrologic chart of the modern Francis Moore, which is used at the present time by believers in astrologo-theology. This assigns different anatomic regions to the influence of several special planets.

It has been said that a blind attachment to the works of great and bygone men often leads us into error, the human mind becoming trammelled; but if we look at the literature of the ancients in the proper way, that is, adapting the experience of both the old and more modern masters of science to the exigencies of the work of the present time, culling out the erroneous and false views and actions of both, will it not lead us as nearly as practical to perfection in science? It is very surprising in reading the annals of ancient surgery to find how many of the principles of our modern scientific work were laid down—principles that we follow in some cases without any modification to speak of at the present day.

Hippocrates, perhaps better than any other man, understood what the requirements of the profession were in his day, for he says: "Whoever is to acquire a competent knowledge of medicine ought to be the possessor of the following advantages—a natural disposition; instruction; a favorable position for study; early tuition; love of labor; leisure." And again he says, in another law: "Instruction in medicine is like the culture of the productions of the earth." And again: "Medicine, of all the arts, the most noble, but owing to the ignorance of those who practice it, it is at the present far behind all the other arts." The great master would probably have changed his mind had he lived in the present era; and in connection with this law of Hippocrates, I have been rather interested in finding out what a few of the more modern great men have said of the members of the healing art.

Pope says:

> They are in general the most amiable companions and the best friends and the most learned men I know.

The Rev. Dr. Parr has said:

> I have long been in the habit of reading on the medical subjects, and the great advantage I have derived from this circumstance is that I have found opportunities for conversation and friendship with a class of men whom, after a long and attentive survey of literary characters, I hold to be the most enlightened professional persons in the whole circle of human arts and sciences.

Dr. Johnson has written:

> I believe every man has found in physicians great liberality and dignity of sentiment, very prompt effusion

[1] Read before the New York County Medical Association, November 19, 1894.

of beneficence, and willingness to exert a lucrative art where there is no hope of lucre.

The following remark of Dr. Knox should also cause great satisfaction to the members of the profession, viz.:

In no order are there to be found individuals better informed, more polite, humane and ingenuous than among the physicians.

REMARKS ON MYTHOLOGY.

The healing art is generally admitted to have taken its rise among the early Egyptians, although it never reached any great degree of perfection until the attention of the more cultivated Greeks was directed to it. The Egyptian Horus, son of Osiris and Isis, is the Apollo of the Greeks and also the God of Physic, and from this god Æsculapius springs. I may make the remark here that the Grecian and the Egyptian Æsculapius are not the same, and therefore not to be confounded with each other, the history of the Egyptian Æsculapius being about as cloudy as a Scotch mountain-top on a sullen day. The Greek antedates the Egyptian by about three-thousand years.

For convenience of description, medical history has been divided into epochs corresponding to four periods of the world's history. The first period corresponds to the first three-thousand years after the deluge, and during the latter part of this period we find the great names of Hippocrates, Plato, and Aristotle. After this period the most prominent physicians were the Arabians, but as far as the intrinsic value of their work is concerned it is but right to state that they were mere copyists of their predecessors, Hippocrates and Galen. They are, however, entitled to the credit of having first fully described in a classic way variola and rubeola. Indeed, so well did they do this that, excepting the etiology and consequently the treatment of these diseases, we have not learned anything further about them to the present day. During this period little or nothing was done for the advancement of science in medicine, the healing art being given up to the monks and empirics. An idea may be derived as to the status of therapeutic measures when one of the most important drugs used was a preparation of mummy dust. This was considered a very valuable remedy, and, indeed, the modern Arabians use it at the present day, mixing it with butter, forming a preparation which they call mantey. Such was the importance of this drug that a law was passed in Egypt (in the reign of Asychis) relating to the pawning of dead relatives by necessitous persons, and at another time a certain Jewish merchant of Alexandria made a fortune in "cornering" the mummy market, which at that time shipped mummy dust to the European physicians. That the ancient Egyptians knew a good deal of anatomy there can be little doubt, as, among other operations, they practised bleeding from both arteries and veins, application of the actual cautery, and also paracentesis for dropsy, *i. e.*, hydro-peritoneum. As is well known, in embalming their dead, by passing a hook through the nostrils, and by a circular movement crushing the ethmoid and sphenoid bones, they were enabled to extract through the orifice thus made not only the brain but also its membranes. In the mummy of Horseisi at the Royal College of Surgeons in London the viscera had been returned to the abdominal cavity in four distinct portions, each portion enveloped in its proper bandages. The embalmer was a kind of inferior priest or physician, and as such was reverenced and esteemed; but the dissector or cutter was not held in esteem, and immediately after he had made the incision in the side he had to run away to escape stoning by the multitude. The botanic and chemic knowledge of the Egyptians was the most valuable at that date, and it is interesting to know in connection with this that the race which was preëminent as preservers of the dead human subject do not now embalm at all. The embalming process was a very complicated one, part of which was the steeping of the body in natron for seventy days.

That mummy dust was common as a drug in the middle ages is illustrated by the following line from the "Bird in the Cage," 1633: "Make mummy of my flesh and sell me to the apothecary." The more modern Ambrose Parè mentions it as a therapeutic measure. The importance of this drug in transmitting contagious diseases must have been very great, and possibly some of our more modern diseases have as etiologic factors (by transmission), in a relative sense, the use of such drugs as mummy dust in the by-gone ages. Thus the physician of earlier times defeated his own ends. As to the origin of medicine Hippocrates says: "It was the necessity which man in the first stages of society must have felt of ascertaining the properties of vegetable productions as articles of food, which gave rise to the science of dietetics, and the discovery having been made that the same system of regimen does not apply in a disordered as in a healthy state of the body, men felt themselves compelled to study what changes of the aliment are proper in diseases." The accumulation of facts bearing on the subject gave rise to the medical art.

Hippocrates was born at Cos, one of the islands of the Archipelago, at about the eightieth Olympiad, *i. e.*, 460 B. C. He was the seventeenth lineal descendant from Æsculapius, and lived in the most advanced period of Grecian culture. He was a contemporary of Socrates and Plato, and was endowed with certain material advantages. He had a

cultivated mind, and being a member of the Æsclepiæ, he possessed peculiar advantages for both theoretic and clinical study of the healing art. As there were four of the same name living about the same age, Hippocrates was called variously, "Hippocrates, the Second;" "The Great;" "The Divine Old Man," and later, "The Father of Physics;" "The Oracle of Cos," and the "Prince of Medicine."

As a writer he has given us some of the best examples of the Ionian tongue, which, however, contained certain Attic expressions. His style, although very expressive, was, like that of most of the ancients, extremely brief. After he had practised several years he cultivated the arts and sciences in travelling twelve years through the various provinces, and also in gathering information on medicines, diseases, and discoveries. We have record of his having previously studied at the famous temple of Æsculapius, in the Isle of Cos. He died at Larissa at an advanced age. Both of his sons were physicians of more or less note. To Polybus, who married his daughter, we owe the arrangement and setting forth of the famous Hippocratic records. For centuries after his death he was preëminent as an authority.

Before touching on his works perhaps it would not be out of place to mention an anecdote connected with his life. Having been called to attend the young Perdiccas, son of Alexander, King of Macedonia, who was reported to be laboring under a slow febrile disturbance, which was undermining his health, Hippocrates, observing his patient very closely, saw that when in the presence of Phila, a fair damsel of the court, he suffered considerable emotion. The diagnosis made by Hippocrates was, "a passion for Phila," and, the fair damsel not being insensible to the charms of the young prince, through the assistance of Telesphorus, the God of Recovery, the royal youngster became happy.

That Hippocrates was a most honorable man was shown by the fact that when Artaxerxes offered him large sums of money, and even entire cities, to engage him to go to Persia to relieve his armies of the plague, he sent the following reply: "Say to your master that I have ample riches; that honor will not permit me to accept his proffered gifts to render succor to the enemies of Greece." This so enraged the Persian King that he menaced the Isle of Cos with destruction unless the inhabitants would deliver up the physician, which, much to their credit, they did not do, so greatly was he esteemed. This subject has been illustrated by Girodet, and the picture presented to the Faculty of Medicine of Paris.

The people of Athens decreed a crown of gold, the right of citizenship, and a free education to the youth of Cos (as of the Athenians themselves) as a reward to Hippocrates for having stayed the plague, and one of the means of destroying this infection which he used was the building of huge fires. The Senate of Abdira sent a letter to Hippocrates to ask him to visit their renowned philosopher and scholar, Democritus, who was supposed to be affected with melancholia; but, from the description, the disease appears to have been delirium tremens.

No one thought so much of what a medical man ought to be as Hippocrates. He says, "It is the business of the physician to make new discoveries in science and to perfect such as are already made, rather than to spend his time in censuring or deprecating others;" and as he felt it to be the most excellent of all arts, this great father of physic spared not the quacks and pretenders.

As is well known, it was he who first made use of the oft-repeated quotation, viz., "That the physician ought to be the minister of nature," translating the word "minister" as servant, as it really means in the Latin. Another axiom of Hippocrates was that nature cures diseases, and he based all his methods of treatment on these lines. That he told no lies is evidenced by the quotation from Autonomus, which says that he admitted having mistaken a fracture for one of the sutures of the skull.

He was the first to cast superstition aside, and was the founder of rational medicine. In symptomatology he was well versed, and as a clinician, and on dietetics, according to his lights, he is unsurpassed to the present day.

It will perhaps not be out of place to give a copy of the original Hippocratic oath:

"I swear by Apollo, the physician, by Æsculapius, by his daughters, Hygeia and Panacea, and by all the Gods and Goddesses, that to the best of my power and judgment I will faithfully observe this oath and obligation. The master who has instructed me in the art I will esteem as my parent and supply, as occasion may desire, with the comforts and necessaries of life. His children will I regard as my own brothers, and if they desire to learn I will instruct them in the same art without any reward or obligation. The precepts, the explanations, or whatever else belongs to the art, I will communicate to my own children, to the children of my master, and such other pupils as have subscribed to the physician's oath, and to no other person. My patients shall be treated by me to the best of my power and judgment in the most satisfactory manner without injury or violence. I will neither be prevailed upon by any other to administer pernicious physic, or to be the author of such advice myself. Cutting for the stone I will not meddle with, but leave it to the operators in that way. To whatsoever house I am sent for I will always make the patient's good the principle aim, avoiding as much as possible all voluntary injury and corruption. And whatever I hear or see in the course of a cure, or otherwise, relating to the affairs of life, nobody shall ever know it if it ought to remain a secret. May I be prosperous in life and business and forever honored and esteemed by all men as I observe this solemn oath; and may the reverse be my portion if I violate it and forswear myself."

It will be seen from the foregoing that there were specialists in surgery in the days of Hippocrates; men who did cutting for stone probably made this a special line.

On therapeutics he says:

"As contraries cure contraries so evacuation is the remedy for repletion, and repletion is the remedy for the loss sustained by evacuation; deficiencies are to be supplied and superfluities retrenched. Contraction and relaxation are to be treated with their opposites, and fluids moving in improper courses are to be brought back unto their own channels."

Among the drugs he used were hellebore, elaterium, scammony, colocynth, mandragora, opium, etc.

That he was a skilful operator we know. He described and performed the operation for empyema, opening the chest and evacuating the pus; he was also very bold in recommending and performing trephining in fractures of the skull and for cerebral tumors. He mentions a very interesting case of caries or necrosis at the hip-joint, for which he made a large incision down to the bone and applied the actual cautery. This unfortunately was unsuccessful, tetanus supervening, and the patient dying on the eighteenth day.

His advice as to epidemics might be studied by physicians of the present day; he refers to the successful treatment of cholera by means of hellebore. In a case of hemoptysis, which was followed by pulmonary tuberculosis, the belief is stated that the former was caused by the latter, the view in fact held to-day. Concussion seems to have attracted some attention, and many are the words devoted to it; and we find a minute description of influenza, which is called epidemic cough. To Hippocrates we are indebted for auscultation, Laennec having stated that he derived most of his ideas of auscultation from Hippocrates' writings.

Gymnastics or active movement in acute diseases is condemned, and rest is advocated. Plato states that, being in ill health, he wore out first himself and afterwards many others by combining gymnastics with medicine. Hippocrates discovered the principles of derivation and revulsion in the treatment of diseases, and treated nearly all kinds of fractures and dislocations (which he had ample opportunity to study among the athletes and gladiators) by reduction and immobilization by means of waxed bandages. He gives us one of the most complete descriptions of accidents which occur at the elbow and knee-joint ever written, even at the present day.

He was very particular about the surgeon's toilet in operations, and directs that the nails should not be longer nor shorter than the ends of the fingers, and was at least cleanly in preparing for surgical work, although, perhaps, he did not go to the extreme of the modern surgeon.

In Aphorism 28 are the words: "Fumigating with aromatics promotes menstruation, and would be useful in many other cases if it did not occasion heaviness in the head," a statement that is interesting in its bearing on the use of anesthetics at that time.

The remarks on urinary sediment in the various fevers in a clinical way are good, even at the present time. The gynecologist of that day was more than primitive. Hippocrates treated cervical stenosis by dilatation with wooden or leaden tubes.

We find the records of an interesting case of a woman who had a fever and took medicine which did her no good. A hard swelling, accompanied by severe pains, occurred below the navel, which was treated by rubbing on oil with the hands, after which she had a copious discharge of blood downward and recovered. This was probably a case of ileus, as compression was resorted to for ileus at that time.

Five varieties of polypus nasi are described, and in the treatment are recommended the ligature, the knife, and the cautery; and there are also given most elaborate and extensive descriptions of accidents which occur in seventh-month and eighth-month births.

Until the days of Delpech and Stromeyer no one entertained such sound ideas on orthopedic surgery as Hippocrates. He treated club-feet by manipulation, and when human strength failed resorted to mechanical devices.

GALEN.

Claudius Galen was born in 131 A. D., at Pergamus, situated in Asia Minor (a city noted for its manufacture of parchment, from which it derived its name), and in the fifteenth year of the reign of the Emperor Adrian. He was the son of Nicon, an able and worthy architect, who gave him an ample education. In this way he became familiar with the doctrine of the Stoics, who were taught to submit the body to the mind; their passions to their reason; to consider virtue as the only good and vice as the only evil; all things external as things indifferent; the Academics, Peripatetics, and the Epicureans. He finally applied himself to the study of medicine at the famous schools of Smyrna, Corinth, and the great school of the age at Alexandria, where he studied, particularly, anatomy. Before he was twenty-one years of age he had composed some medical works. He visited Lemnos to investigate its celebrated earth, and also Syria to inspect the, at that time, renowned balsam of Syria. As far as his medical practice was concerned, he did not always tread an easy path, as many of the celebrated physicians of the day were jealous of him. His enemies taunted him as being one with theory but not practice. That he was highly esteemed by the more influential

nobles of the day is evidenced by the fact that he was thought a great deal of by Bœthus, a consul whose wife he had treated successfully for fever, and be it known that in the records it is set forth that in the presence of this Boethus he made a dissection, exhibiting and demonstrating the organs of respiration and of the voice. After five years' residence in Rome he journeyed from that metropolis, and returned to his native city. This action was probably due to the persecutions that he experienced from his fellow-physicians, whom he had tried to lead back to the right path, viz., that of following the precepts and principles of Hippocrates, *i. e.*, to have them become students of nature. He was sent for by the Emperors Marcus Aurelius and Lucius Verus from Aquelliæ, but the plague breaking out they had to remove with a small retinue, Lucius Verus dying of hemorrhage on the road, and his body being sent to Rome. Galen arrived there soon after. At another time, being invited to Germany, he refused, and becoming apprehensive of foul play, retired to the house of Commodus, the Emperor's son, who was attacked by a severe fever, and was cured by Galen.

Galen's vast superiority over his colleagues was undoubted. The Princess Faustina says: "Galen shows his skill by the effects of it, while other physicians give us nothing but words." One of the first steps toward acquiring a reputation was undoubtedly the successful discovery of the royal indigestion of which he cured the Emperor, and who declared: "We have but one physician; Galen is the only man of the faculty." An idea of the royal appetite of that day may be derived when the statement is made that the Emperor Vitellius consumed in seven months food to the value of thirty-five million dollars.

Galen died in his seventieth year. He wrote not only on medicine, but on grammar, philosophy, and geometry, and it is to be regretted very much that a number of his original manuscripts were lost at the fire of the Temple of Peace at Rome. The best edition of his entire works in Greek and Latin is by Rene Chartier, published at Paris in 1679, in thirteen volumes, including also the works of Hippocrates. On the title-page of these Galen is referred to as "Archiater" (chief healer) or "Physician to the Emperor." He stands almost isolated and alone for knowledge of anatomy among the ancients, and asserts its importance as the foundation of all useful medical knowledge. It has been said that Galen could not have enjoyed the dissection of the human body, the Roman laws being very severe against those who should mutilate the bodies of the dead; but it must not be forgotten that he could have dissected the bodies of apes and of slaves and of the enemies of Rome taken in battle. Of course, his knowledge of osteology was very great, almost equivalent, indeed, to that we possess at the present day. He also had great opportunities for the study of accidents, which the gladiators (to whom he was physician) sustained during the mortal combats in which they took part.

Galen paid particular attention to hygienic remedies, such as air, food, motion, sleep, and emotion. He held that the end of medical science was to preserve the parts of which the body is composed in a state of nature, and to endeavor to reëstablish their functions when disordered, and hence the necessity of a knowledge of physiologic anatomy. The parts of the body he considered as simple or compound, similar or organic, having for their elements fire, air, earth, and water, of which the qualities are heat, moisture, dryness, and cold. While they are balanced health is maintained; when they are disturbed, disease results; and health, therefore, according to Galen, depends on the just proportion of the four elements. He admits, with Hippocrates, four humors: Blood, phelgm, yellow bile and black bile, corresponding to the four temperaments. He speaks of three kinds of spirits, natural, vital, and animal, corresponding to the same number of faculties and functions. The natural spirit he appropriates to the life in particular for the generation, growth, and nutrition of the body; the vital to the heart, for the elaboration of heat, and the animal to the head, whence proceed sensation and motion. But he denies not particular functions to particular organs, and looks upon nature as the prime factor of all, and, with Hippocrates, recommends the physician to be the minister of nature.

Galen was particularly good in prognostic acumen, and boasted not a little of it. He paid the most minute attention to symptomatology, and would probably have made a more accurate prognosis, notwithstanding his deficiency in knowledge of some of the diseases of the present day, than a great many of our so-called specialists, such was his attention to the great mistress, Nature. He paid particular attention to the reciprocal action of the heart, and to him we owe the terms used at the present day, "systole" and "diastole."

He practised surgery in the early part of his career, and writes of tumors, wounds, ulcers, fractures, dislocations, and other surgical diseases.

His physiologic experiments on living animals are good even at the present day. He described the function of the brain and nerves, maintained that sensation and volition resided in the nerves, and that through their agency the presiding principle, the soul, derives it action. He infers that the brain is the seat of this presiding principle. His ideas on the anatomy of the nerves were most erroneous, as he refers to them as tubular. He may, however, have used the term tubular (tuba, a trumpet) to

demonstrate more comprehensively their transmitting power. His doctrines, without much change, were held to be correct down to the sixteenth century, Vesalius being the first to deny his views. His works are very voluminous, and comprise nearly five-hundred volumes on medicine alone. He was not a specialist in any sense of the word, being what would be called at the present time a "good all-round man," except perhaps that he was particularly learned in the nature of poisons or toxicology.

Galen treated not symptoms, but as far as possible causes. He practised phlebotomy in a very rational manner. Instead of stimulation in adynamic fevers by artificial means, he recommended a brisk rubbing of the skin until it should be hot, thereby getting the same effect from peripheral stimulation. In malaria he used pepper extensively as an antiperiodic. He frequently made the error of mistaking the pyrexia caused by some local inflammation for that of an essential fever. Clysters were used in acute enteritis, and great importance was attached to constitutional treatment in a great many apparently local diseases.

He pointed out that in the nervous system opposite causes produced somewhat similar conditions. For instance, loss of blood will produce delirium, convulsions, and paralysis, while plethora will cause apoplexy, convulsions, and paralysis. He said of epilepsy that this disease is never cured in those past the age of puberty. In pulmonary tuberculosis he used the modern "cure de lait," sending his patients to the Bay of Sorento, where they could obtain milk fresh and warm from the cow. He distinguished between the slow non-inflammatory and bronchitic form and the acute inflammatory ulcerative form, making a somewhat similar classification to that of Niemeyer of the present age.

INTESTINAL APPROXIMATION, WITH REPORT OF A CASE OF GASTRO-ENTEROSTOMY AND ONE OF END-TO-END APPROXIMATION.[1]

BY C. B. LYMAN, M.D.,
OF DENVER, COLO.;
ADJUNCT PROFESSOR OF FRACTURES AND DISLOCATIONS, MEDICAL DEPARTMENT UNIVERSITY OF DENVER; SURGEON TO UNION PACIFIC SYSTEM; VISITING SURGEON TO ST. JOSEPH'S HOSPITAL.

AT the request of your President I herewith present the report of two interesting cases in which I made use of the Murphy button for anastomotic purposes between portions of the alimentary tract. The fact that both cases resulted fatally does not deter me from reporting them, for it is from our failures that we often gain much information.

CASE I.—James G. came under my notice late in August, complaining of constipation, loss of appetite, occasional vomiting, a moderate loss of flesh, and a feeling of languor. A superficial examination revealed nothing of an organic nature. Various lines of medical treatment were used, but without improvement, and the man was sent to St. Joseph's Hospital about August 27th. When admitted to the hospital he was very much constipated; large doses of magnesium sulphate, oleum tiglii, etc., had little or no effect on him; enemata were resorted to daily to produce an evacuation; this extreme constipation continued; nausea and vomiting came on as a constant symptom; he rapidly lost flesh; he could retain nothing on his stomach but very small quantities of beef-juice. There was no rise in temperature. Examination at this time showed a stomach considerably dilated, reaching down nearly to the umbilicus; there was no pain or tenderness. The noticeable feature of the examination was the great peristaltic action of the stomach-walls; the wave of contraction could be seen beginning at the cardiac orifice and travelling slowly along the greater curvature until it reached the pylorus, where it stopped abruptly; at times the contraction assumed an hour-glass character. Upon two separate examinations I could feel at the pylorus, just as the peristaltic wave reached that point, a hard mass, ill-defined in shape and size. I made a diagnosis of tumor of the pylorus and advised an operation, which was refused by the patient and his friends. The patient was examined by a number of surgeons, among them being Dr. Hartman, of Chicago. It was agreed by all that the case was in all probability one of carcinoma of the pylorus, although some symptoms were lacking to make a perfect history; operation was advised by all.

On September 12th the patient finally agreed to the operation, and accordingly on the morning of the 13th, with the assistance of Drs. L. E. Lemen and J. W. O'Connor, I operated. I made a median incision, found a hard, nodular mass at the pylorus, extending from that point along the walls of the stomach for a distance of three inches; the duodenum was isolated with very great difficulty on account of its contracted condition. An opening was made in the duodenum at a point about opposite the entrance of the ductus communis choledochus, and one-half of a medium-sized Murphy button inserted; the other half was inserted in the stomach on the posterior surface about three inches and a half from the pylorus; the two portions of the button were then firmly pressed together. The abdominal cavity was flushed out with a normal salt-solution and the abdominal wound stitched up with silkworm-gut and the dressings applied. The man recovered from the anesthetic well, suffered no pain, and was conscious. The nausea and vomiting almost entirely ceased; the temperature became subnormal, and remained so until death took place on the fourth day, the patient being conscious to the last; the pulse ranged from 120 to 160. Nourishment was administered by the rectum after the operation, by means of beef-peptonoids, coffee, and eggs.

An autopsy was made twelve hours after death in a very great hurry; the stomach and duodenum were the only parts which were removed; the but-

[1] Read before the Denver and Arapahoe Medical Society, December 11, 1894.

ton was found in place as described; the stomach-walls were thickened to about three times their natural thickness, the mass extending from the pylorus toward the cardiac orifice, a distance of about three inches; the pyloric orifice would not admit the tip of the little finger; the stomach was considerably dilated, the duodenum contracted; there was apparently no adhesion between the walls of the stomach and duodenum at the point where the button had been inserted.

I have been able to find records of twenty-one cases of gastro-enterostomy done with the Murphy button. These have not all been published in detail, but have been collected in tables by various writers on this subject; to this number I would add this case, the first in this State, making twenty-two in all. Of this number twelve died, the time of death after the operation varying from a few hours to forty-six days. One died from continued hemorrhage, nine from exhaustion, one from broncho-pneumonia, one from septic peritonitis, from the fact that the tissues slipped from the grasp of the button, thus allowing the contents of the stomach and duodenum to escape into the peritoneal cavity. This would make the percentage of deaths 54.54. There have been, in all probability, other fatal cases which have not been reported, for there is a disposition among surgeons not to report their unsuccessful cases, and which if reported would swell the percentage of deaths. The results are certainly not very encouraging, and from a letter recently received from Dr. Murphy I infer that he is rather inclined to discourage operation on these cases except under the most favorable circumstances.

The operation of gastro-enterostomy is, of course, only designed for temporary relief to the distressing symptoms of nausea, vomiting, and progressive exhaustion. Unfortunately a large percentage of these patients do not give their consent to operation until the exhaustion is so far advanced that the chances for recovery from operation are small. Had this patient consented to operation at the time it was first suggested to him he might have survived.

Intestinal approximation is a subject that is being much talked about, and our journals are full of articles bearing on it. The Murphy button has come in for its share of consideration, along with the various other mechanical methods of procedure, such as the Senn plates, potato plates, Robinson's hard-rubber plates, Abbe's catgut rings, etc. It is not my purpose to discuss the comparative virtues of these various measures, since I have nothing new to offer on the subject. From my own experience I can say that the button is an ingenious device which enables us to make an anastomosis quickly, thus shortening the time of exposure of the peritoneal contents to the atmosphere, and this is an important factor in this part of the country, for it is held by many that the peritoneal membrane cannot stand exposure as long in a dry atmosphere as it can in a moist one. The operation by means of the button requires a minimum amount of manipulation of the parts for its application, and when once properly applied it is secure. When the button escapes, as it does in the course of from fourteen to twenty days, it leaves a round, clean-cut and good-sized hole, which is not liable to contract subsequently. For this particular operation of gastro-enterostomy Dr. Murphy has devised an oblong button, but I am informed that he has returned to the use of the round button.

Every surgeon can learn many things from his own operations, as well as from those of others. In my small experience in this class of cases several points have been impressed on my mind. One is that one should not undertake to operate against time; the matter of a few seconds more or less makes no material difference. In making the incision for the introduction of the button one should not make it more than two-thirds the diameter of the button; the button can be gradually worked through a small hole; one should be sure that the silk that is used for the drawstring is strong enough to stand considerable strain, and an ordinary cambric needle should be used for its introduction instead of a surgeon's needle; when the wall of the viscus is drawn up one should be certain that it is around the stem and not outside the spring, a thing that I have known to happen. One should be sure that the two portions of the button are pressed firmly, but not too firmly, together; if pressed too hard, it might cause the tissues to be cut through before adhesion had formed. There are imperfect buttons on the market; therefore every button should be carefully examined before being used; the spring should be neither too strong nor too weak, and the opposing surfaces should be broad and the spring-catch should be perfect.

CASE II.—Peter G., a Finlander and a coalminer, came to the hospital October 17th, having been injured in a coal-mine on October 14th, by having three tons of coal fall from the roof of a chamber on him while he was in a stooping posture. The great weight forced him to the floor, causing him to make what a contortionist would call a "split." When I saw him first he had a temperature of 101.5° F., and a pulse of 140; the belly was considerably swollen, tympanitic, and painful on pressure. The inner side of the left thigh and the lower portion of the abdominal wall on that side were ecchymotic and emphysematous; there was a fracture of the pelvis two inches to the left of the symphysis; a wound in the perineum two inches long communicated with the seat of fracture. The diagnosis was made of a compound fracture of the pelvis, acute peritonitis, with, probably, a perforation of the gut. The rapid development of peritonitis and symptoms of collapse, together with

the presence of air in the subcutaneous tissues at the seat of the fracture, led to the supposition that a sharp spicule of bone had penetrated the parietal peritoneal membrane and had produced a perforation of the gut. Although the case offered no great encouragement for a successful operation, an operation was decided upon. With the assistance of Dr. J. W. O'Connor the abdomen was opened in the median line, the gut examined carefully, and, after a good deal of searching, a circumscribed abscess was opened on the right side midway between the crest of the ilium and the last rib; this abscess-cavity contained pus of a fecal odor, due, as I found, to a perforation in the small gut one-fourth of an inch in diameter; no other abnormal condition was found within the abdominal cavity, with the exception of a simple peritonitis. Two inches of the gut were excised and an end-to-end anastomosis was made with a large-sized Murphy button. The intestines were so distended by gas that it was impossible to replace them within the abdominal cavity without first letting some of it out; so a small incision were made and, after a large quantity of gas was allowed to escape, a stitch was introduced to close the hole. The abdominal wound was stitched up and the patient died within an hour. The autopsy revealed a fracture of the pelvis two inches from the symphysis on the left side, communicating with the perineal wound. No wound of the peritoneal membrane could be found. The retroperitoneal tissues were filled with blood; all of the intra-abdominal organs were normal except at the place where the anastomosis was made; this point was found to be in the small gut two feet from the ileo-cecal valve.

The question in this case was the origin of the perforation, whether it was produced at the time of the accident, whether the gut was contused sufficiently to cause a subsequent necrosis of the wall, or whether the perforation was the result of a pre-existing pathologic condition of the intestinal wall and entirely independent of the accident? No microscopic examination was made of the section of gut which was removed, as it was unfortunately lost. There was no external, visible sign of injury on the right side where the abscess-cavity was found; the autopsy showed no solution of continuity of the peritoneal membrane. It was my belief that the perforation was the result of processes which were in existence before the accident was received. The air in the subcutaneous tissue must have been drawn in by contraction of the muscles in the immediate neighborhood.

The technique of an entero-enterostomy is very simple, and has been so many times described that I will not dwell on it at this time. I regret that both cases resulted fatally, but it is to be said in behalf of the operator that both were extreme cases, not at all suited for operation with any great hope of success. Should another case present itself for operation in the same condition as the first one I would hesitate about operating. The second case was particularly hopeless, as acute peritonitis had set in, and the heart's action was bad; there were two sources of septic infection, the abscess-cavity and the perineal wound; and finally the nationality of the patient was against success, for I find that Finlanders as a class do not stand injury and surgical shock at all well.

CALIFORNIA BUILDING.

THE ASIATIC LUNG-DISTOME IN THE UNITED STATES.

BY HENRY B. WARD, PH.D.,
UNIVERSITY OF NEBRASKA, LINCOLN, NEB.

IN 1893 I reported[1] the occurrence of the Asiatic distome in the lungs of a cat examined in Ann Arbor, Mich. This was the first reported find of this species on this continent, and the possibility of its being a permanent guest in this country was so serious that I urged a careful examination of all cases of lung-parasites in the domestic animals, with a view to ascertaining whether this might be an isolated instance, or whether the parasite was actually established within our land, for it is true that the Chinese, among whom the parasite is very common, regard cats as great pets, and this single cat, of whose antecedents nothing was known, *might* have been brought to this country as a pet, and have wandered from its owner afterward.

In an extract[2] sent me this fall was a notice of an unknown distome found in the lungs of a dog. The description led me to suspect at once that it was *Distoma Westermanni*, and in response to my request Prof. Kellicott very kindly sent me some specimens for examination. The study of these shows beyond question their identity with the form found in Ann Arbor and with the Asiatic species. The animal from which they were taken was "a shepherd dog from the country near Columbus, Ohio." Both the host and the locality from which it came render the possibility of its having been imported from the East practically *nil*, and to my mind demonstrate the establishment of the parasite in this country.

The existence of a new human parasite within our land, and especially of one so dangerous in its home as this distome, is a matter of sufficient importance to the medical profession to call for the publication in this place of some facts concerning its anatomy and development, as well as its diagnosis and frequency, together with other biologic data, especially as references to it are wanting in most American works.

In 1880 Bälz, a European physician, reported the common occurrence of parasitic hemoptysis in

[1] In the Centralblatt für Bakteriologie und Parasitenkunde, Bd. xv, pp. 362–64; also in the Veterinary Magazine, vol. i, pp. 355–59.

[2] D. S. Kellicott: "Certain Entozoa of the Dog and Sheep." Trans. Ohio State Med. Society, 1894.

Japan, which, though ascribed to tuberculosis, was due, he thought, to a gregarine. Soon afterward he recognized the objects which he had taken for psorosperms as distome eggs, and was able to publish in 1883 a description of the parasite under the name of *Distoma pulmonale*. Later Leuckart demonstrated the identity of this form with a distome from the lung of a Bengal tiger that had died in the zoologic gardens at Amsterdam. This distome had

FIG. 1.

FIG. 2.

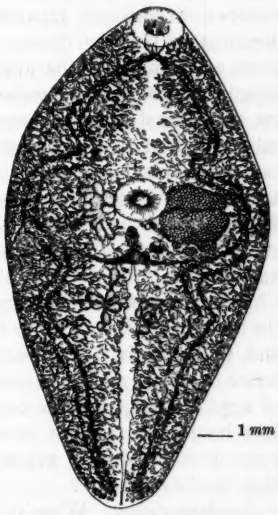

FIG. 3.

FIG. 1—*Distoma Westermanni;* ventral and lateral views (after Leuckart). Natural size.

FIG. 2.—*Distoma Westermanni* from the ventral surface. Specimen from Columbus, O., mounted in balsam. Original. Magnified 5½ times.

FIG. 3.—Egg of *D. Westermanni* with embryo. (From Leuckart after Nakahama.) Magnified 225 times.

been carefully studied and described in 1878 by Kerbert[1] under the name of *Distoma Westermanni*, which has the right of priority, and must be retained as the name of the parasite according to the established laws of zoologic nomenclature. On its presence and importance among the Eastern nations there has appeared a long list of papers largely inaccessible to the American physican. Dr. C. W. Stiles, helminthologist of the Bureau of Animal Industry at Washington, D. C., published,[2] in connection with a note on the original discovery of this parasite in the United States, a valuable bibliography of the species. The most important of these articles are those of Leuckart[3] and Yamagiwa,[4] from which, together with the papers of Kerbert and Stiles, and my own studies on the forms found in the United States, the following account was prepared.

Distoma Westermanni Kerbert 1878. Synonyms: *D. Ringeri* Cobbold, 1880. *D. pulmonis K., S.* and *Y.*, 1881. *D. pulmonale* Bälz 1883. *Mesogonimus Westermanni* Railliet 1890.

Length, 8 to 10 mm. (Leuckart); 11 to 16 mm. (Ward); 15 to 20 mm. (Kellicott.) Breadth, 4 to 6 mm. (Lkt.); 5 to 7 mm. (Wd.); 6 to 8 mm. (Kct.). The body is thick and plump, somewhat resembling a dipterous larva in shape (Fig. 1), with the posterior end more pointed than the anterior, and the ventral surface much flatter than the high arched dorsal. In color the living distome is deep-red or reddish-brown, darker along the middle of the body; the alcoholic specimen is dark steel-gray at the sides, with a brighter band along the center; the black dendritic acini (Fig. 2) of the vitelline gland can be easily recognized with a hand lens. The cuticula is everywhere covered by broad flat spines of varying length and size, which are lacking in poorly-preserved specimens.

The suckers are notably small and often difficult to see. The oral sucker has a mean diameter of 0.53 mm. (Lkt.), or 1.2 mm. (Wd.) for the American variety. It is not situated at the exact anterior extremity of the body, but is slightly subterminal, and its orifice is directed downward. The ventral sucker, or acetabulum, is a little larger than the oral, being 0.65 to 0.75 mm. in diameter (Lkt.), or smaller, 0.75 to 1 mm. (Wd.). It will be noticed that the oral was smaller in the specimens examined by Leuckart, whereas in those from Ann Arbor the reverse obtained. In the specimens from Columbus the oral suckers average 0.864 by 1.017 mm. and the ventral 1.17 by 1.31 mm., relatively the same as in the Asiatic form, but absolutely much larger. I should like to emphasize in this connection the extreme uncertainty of description based solely or even largely upon the size of organs as variable as a purely muscular sucker. Such descriptions are unfortunately very common in various quarters at present, and serve too frequently as a model for the description of new forms. For the accurate description of a species topographic relations are essential, as they are also for any identification of it subsequently. In no other way can a form be positively identified, and hence a short summary of these relations in *Distoma Westermanni* is here presented.

The general anatomy of the internal organs can easily be studied from specimens lightly stained and mounted in balsam (compare Fig. 2). Connected with the oral sucker, and lying partly at least upon it, is the prominent pharynx; it is about half as long as the diameter of the oral sucker. The esophagus, which follows directly upon the pharynx, is short,

[1] Zool. Anz., i, pp. 271–73; later also in Archiv f. mikr. Anatomie, Bd. xix, pp. 529–578.

[2] Johns Hopkins Hospital Bulletin, No. 40, May, 1894.

[3] Parasiten des Menschen, ii. Aufl., Bd. i, pp. 404–440.

[4] Virchow's Archiv f. pathol. Anat. u. Physiol., Bd. cxxvii, pp. 446–456.

and from its end arise almost at right angles the two crura intestini, which extend in a somewhat winding course to the posterior end of the body. The clear, irregular band through the center of this part of the worm indicates the position of the excretory sinus, a longitudinal tube varying much in caliber; it is filled from numerous canals along its sides, and opens almost at the posterior tip of the body.

The tissue of the body just below the surface is filled by the numerous acini of the vitellaria or yolk-glands, which impart to the lateral areas their dark, crowded appearance. These glands empty by longitudinal ducts into the two transverse ducts just behind the acetabulum. At the center, where these transverse ducts unite, is situated the vitelline reservoir. The ovary is a lobed organ at the right of the center immediately adjacent to the acetabulum; and a corresponding position on the left is taken by the condensed coils of the uterus, which are filled with yellow, thin-shelled eggs.

The testes, two in number, are located, one on either side of the excretory sinus, half-way from the acetabulum to the posterior end of the body. They are deeply-lobed organs, and are indistinct in outline in unstained specimens. Their ducts, which are not represented in Fig. 2, can be made out only with difficulty. They run obliquely toward the median side of the uterus coil, where they join and open at the common genital pore, which is situated immediately behind the acetabulum and a little to the left of the median line. There is no prominent copulatory organ in this species.

The eggs, which may be seen in enormous masses in the uterus, or found free on the surface of the worm, or in the immediate vicinity of it, are oval, yellow, and provided with a thin shell, which has a cover (Fig. 3). They measure 0.08 to 0.1 mm. in length by 0.05 mm. in breadth (Lkt.), or 0.096 to 0.118 by 0.048 to 0.055 mm. (Wd.). The oval ciliated embryo develops within the egg some time after it escapes from its host. "The fate of these embryos," says Leuckart (*loc. cit.*, p. 436), "is at present entirely unknown. That they wander directly into the later host contradicts all analogy. They will probably, as is known of other forms, next seek an intermediate host, and in this produce a generation of cercariæ, which then for the first are brought in one manner or another into a man, whether directly into the lung, as Bälz assumes, is at least questionable. Much more probable is it that the residence in that organ is the result of a further migration."

Distoma Westermanni has been found in the lungs of the tiger, cat, and dog, as well as man. The description given by Kellicott (*l. c.*, p. 3) will give a good idea of the general appearance of the infected organ. He says: "On opening the thorax the lungs were found to present unusual appearances: small brown spots were thickly distributed over the entire surface of the pleura, and scattered over the lobes were many tumor-like swellings of a deep-red color, contrasting strongly with the general pink of the lung. The tumors were mostly about the roots and along the dorsal borders of both sides. On cutting open the tumors distomes were found within; some were surrounded by a capsule, while others were burrowing after the fashion of the large distomes in the livers of sheep and cattle. These burrows were filled with débris and pus." Yamagiwa, who was a member of the Royal Japanese Commission for the investigation of the disease in that country, has given an account of the appearance of the human lung in several cases of post-mortem examination; but the general characters were the same. He also calls attention to the occasional discovery of the parasite encysted in the liver, peritoneum, mesentery, and even in the cerebral hemispheres. In the lung they appear to be confined to the periphery of the organ and inclosed in special cysts which contain not only the distomes, but also eggs and masses of Charcot's crystals. These cysts communicate with the bronchi by fine openings through which the eggs and the crystals already mentioned reach the exterior in masses of mucus and blood. The number of eggs discharged in the course of a single twenty-four hours by a patient who had suffered thirteen years from the disease was estimated to be *not less than twelve-thousand!*

Symptomatology. When in the lungs, its common abiding-place, the distome gives rise to periodic hemoptysis and chronic cough, with rusty mucoid expectoration. The condition of the patient remains good, and almost no abnormal sounds can be detected by percussion of the chest. Yamagiwa says that the general appearance of the expectorations is identical with that in tuberculosis, and, as a matter of fact, the disease was formerly diagnosticated as tuberculosis in Japan. The presence in the sputa of the eggs already described and figured is the only characteristic symptom, and positive diagnosis will rest then on the microscopic examination of the sputa, which will reveal, in case the parasite be present, numbers of its yellow-brown egg-shells. When one considers the prevalence of so-called tuberculosis in this country, and the frequently careless diagnosis of many, it is not at all unlikely that cases of this parasite may have been mistaken for tuberculosis, as Yamagiwa says was formerly the case in Japan. And this is the more probable, as the presence of such lung-parasites and the concurrent symptoms are doubtless unknown to many, and to most others are a matter of interest rather than important enough to deserve their careful attention, even though they may have heard of its occurrence in the far East.

The accidental rupture of a large bloodvessel by the destruction of the lung-tissue, and, in the severest cases, general anemia seem to be the only dangers to be feared. On removal from an infected district patients have apparently entirely recovered. During the continuance of the disease almost every patient suffers from malaise.

With regard to the region in which this parasite exists it may be said that Japan, China, Corea, and Formosa are known to be seriously infected. In one district of Japan, according to Bälz, almost every inhabitant suffered. In Formosa 15 per cent. of the entire population was infected. No doubt the disease is at home in the entire eastern portion of Asia, but exact knowledge of this region is lacking. According to the report of the Japanese Commission, those affected are largely laborers, and men rather than women.

Of the means by which the parasite reaches the lungs nothing is known, and the statement of Yamagiwa that the drinking-water is at fault rests on rather uncertain ground: the observation that in a certain town those affected drank from a single stream.

In regard to the parasite in our own country it is not necessary to emphasize the importance of immediate investigation as to the region in which it is established, and of efforts to stamp it out, or at least to keep it within its present bounds. No less important is a full knowledge of its life-history, that the means of infection may be accurately known, and by wide publicity its spread be prevented so far as is possible. For both of these ends all cases of the disease should be reported with as little delay as possible, and care should be exercised to investigate every case of lung-parasite, so that an accurate opinion as to its character may be given. In any case I shall be glad to receive specimens of suspected parasites for determination.

CLINICAL MEMORANDA.

FURTHER REPORT OF TEN CASES OF TYPHOID FEVER TREATED BY THE CHLORIN-QUININ SOLUTION,

Recommended by J. Burney Yeo, M.D., of London, England.

BY EMIL KING, M.D.,
OF FULDA, MINN.

BEING very favorably impressed by an article in the number of the *American Journal of the Medical Sciences* for June, 1894, by Dr. J. Burney Yeo, on "The Treatment of Fevers, Especially Enteric," I determined to test this treatment at the earliest opportunity. While nearly all physicians admit the success attained by the Brand bath-treatment, yet most of us cannot employ it on account of the unreasonable prejudice against it among the laity and on account of lack of facilities to give it. We must, then, employ a rational and symptomatic treatment based on the pathology of the disease.

In all of my cases but one, in which the solution was taken early in the disease and according to directions, the result was very good. In all of these cases the temperature seldom ran above 102° F., the tongue was less foul than is usual, and there was more desire for food. In none of my cases was delirium or stupor noticed. There were no complications except a relapse in one case. The good results seem to me to be due to the disinfection of the intestinal contents, consequently with less absorption of toxic material and lessened ulceration in the bowel. The antiseptics administered in this disease are legion, but all I think are inferior to chlorin, as they are not as soluble, and do not permeate the intestinal contents so thoroughly. I submit brief histories of the following ten cases.

CASE I.—J. R., a German, aged twenty-seven years, married, was by occupation a farmer. The symptoms of the disease came on gradually, and consisted of headache, coated tongue, anorexia, pain in the arms and legs, and constipation. I saw him for the first time on September 19th, on the sixth day of his illness. In addition to the foregoing symptoms his temperature was 103°, and he had pain on pressure in the right iliac and umbilical regions, with sleeplessness. Treatment was as follows: rest in bed, a diet of diluted milk and beef-broth, cold and wet applications to the head, calomel and sodium bicarbonate in small doses until the bowels moved freely, and then the chlorin and quinin solution, a tablespoonful diluted in water, was given every two hours. The temperature never rose above 102° F. The disease ran a mild course, and convalescence began at the end of the third week of illness. Recovery was rapid.

CASE II.—M. B., a female, a German, aged twenty years, was a farmer's wife. The symptoms came on gradually, and consisted of headache, sleeplessness, anorexia, a heavily coated tongue, diarrhea, and pain in the back, arms, legs, and, on pressure, in the right iliac region. I saw the woman for the first time on September 20th, on the eighth day of her illness. I found a temperature of 103.7° F., and on pressure gurgling and tenderness in the right iliac fossa. Treatment consisted in a diet of diluted milk, water, weak lemonade without sugar, and weak tea, powdered opium and bismuth subnitrate until the diarrhea lessened, and of the chlorin-quinin solution a tablespoonful every two hours. The fever subsided, headache and pains lessened, but the vertigo continued into convalescence. A slight bronchitis developed, which however subsided without treatment. Convalescence began on October 3d, and continued without interruption.

CASE III.—A. G., a German, male, aged twenty-nine years, single, was by occupation a merchant. Symptoms began gradually, and consisted in weariness, anorexia, a heavily coated tongue, and very foul breath, thirst, slight diarrhea, and pain in the abdomen. I saw the patient for the first time on September 20th, on the fourth day of his illness. In addition to the symptoms noted he had a temperature of 103.5°. He was ordered rest in bed, a milk-diet, water to drink, opium for the diarrhea, and of the chlorin-quinin solution a table-

spoonful every two hours. Convalescence began on the eighteenth day of his illness, resulting in rapid recovery.

CASE IV.—W. W., a male, an American, aged twenty-four years, married, was by occupation a surveyor. The symptoms developed gradually, with anorexia, a coated tongue, thirst, pains in the arms, legs, and iliac region, constipation, slight tympanites, and sleeplessness. I saw him for the first time on September 23d, on the seventh day of his illness. The temperature was 104°. I ordered absolute rest in bed, a milk-diet, calomel, and sodium bicarbonate in small doses until the bowels moved freely, and of the chlorin-quinin solution a tablespoonful every two hours. A cold pack was applied once or twice during the night for a week, with very good results. From the fourteenth day the temperature never went above 102°. Convalescence was established on the twentieth day, and continued without interruption.

CASE V.—F. B., a German, male, aged twenty-five years, a farmer, married, had symptoms which came on gradually and consisted of headache, anorexia, a coated tongue, thirst, constipation, and slight tenderness in the right iliac region. I saw him for the first time on September 23d, which was the third day of his illness. His temperature at this time was 103.4°. I ordered rest in bed and a diet as in the preceding cases. His headache being very severe, I ordered a few doses of Dover's powder, also cold and wet applications to the head. The chlorin and quinin solution, a tablespoonful, was ordered every two hours. The case ran a mild course, convalescence being established early in the fourth week and continuing favorably.

CASE VI.—W. P., of German parentage, a male, aged twenty-three years, single, was a brother of Case V. The symptoms in this case were very much like those of Case V except that there were more sleeplessness, a higher temperature (104°), and a severe bronchitis with threatened pneumonia, of which he had a severe attack two years ago, but which readily yielded to prompt treatment with tincture of veratrum viride, and sharp counter-irritation. The chlorin and quinin-solution was given as in the preceding cases. Convalescence began on the twenty-fourth day. He was exceedingly weak, and brandy was ordered, this being the only case in which alcoholic stimulants were found necessary. Recovery was somewhat slow.

CASE VII.—J. P., of German parentage, a male, aged twenty years, single, a farmer, had symptoms beginning with headache, pains in the arms, legs, and back, a coated tongue, anorexia, and sleeplessness. I first saw him on October 2d, on the third day of his illness, when the temperature was 102.3°, and slight tenderness on pressure in the right iliac fossa. The treatment was the same as in the former cases. The disease ran a very favorable course, convalescence being established by the seventeenth day, the appetite returning rapidly, and recovery was prompt.

CASE VIII.—M. P., a female, German, married, and mother of twelve children, aged fifty-three years, was in a bad physical condition through constant nursing and the care of a large family. The disease came on gradually with vertigo, headache, pains in the back, coated tongue, and anorexia. I saw her for the first time on October 6th, on the fourth day of her illness. The temperature was 104°, there were some tympanites and much tenderness in the abdomen. The treatment in this case varied in the omission of the quinin, which caused severe tinnitus. The duration of the illness was four weeks, convalescence being somewhat protracted but finally complete.

CASES IX and X.—C. H. and M. H., brother and sister, of German parentage, aged twelve and fourteen years respectively, in whom the disease came on at the same time and gradually, the symptoms consisting of weariness, coated tongue, and anorexia, with a tendency to drowsiness. I saw them for the first time on October 8th, on the seventh day of their illness. The boy had a temperature of 104°, the girl 103.2°. Both had pain in the abdomen on pressure. There were constipation and tympanites in both. I ordered rest in bed (having found them sitting up), milk-diet, calomel, and sodium bicarbonate in small doses to move the bowels, cold and wet applications to the head, orders to give a cold pack and sponging being refused by the parents. The solution of chlorin and quinin, a dessertspoonful, was ordered every two hours and diluted with water. Convalescence began on the twenty-third day of the illness, resulting in perfect recoveries.

I could lengthen this clinical report by adding five more cases successfully treated by this method. Only one of the entire number of cases had a relapse, and this case has now perfectly recovered. I hope that this treatment will be given a thorough trial in some hospital, and I firmly believe that the results, when the treatment begins early, will be as good as those obtained by the Brand method.

PRIMARY LARYNGEAL DIPHTHERIA SUCCESSFULLY TREATED WITH DIVIDED DOSES OF BEHRING'S ANTITOXIN NO. 1.[1]

BY H. H. FREUND, M.D.,
OF PHILADELPHIA.

THE patient was a male child one year old, weighing 15 pounds, seen on the evening of December 14, 1894, at 6 P.M., with a history of having been croupy, restless, feverish, and breathing rapidly for the previous twenty-four hours. Examination of the fauces revealed an intense redness of the pharynx; and surrounding the rima glottidis the characteristic appearance of the diphtheric membrane was evident at this examination. No fetor could be detected in the breath, nor was any lymphatic glandular enlargement present. At the first examination the pulse was 136, the temperature 99°, and the respiration 26. Six hours later, 4 c.c. (♏ 64) of Behring's antitoxin were injected in the scapular region, slight massage soon dispelling the swelling. Eight hours after the first injection of antitoxin the pulse was 160, the temperature 101.4°, and the respirations 40. The little patient was restless during the night, and on the following day no marked improvement could be detected in its condition. The diphtheric membrane had extended upward into the posterior wall of the pharynx as much as a half-inch. Twenty-four hours after the first injection, a second one was given to the amount of 3 c.c. (♏ 48) near the site of the first injection. During the second night the child

[1] Read before The James Aitken Meigs Medical Association.

was easier, the whole condition took a more favorable turn. On the morning of the second day the pulse was 126, the temperature 100.2°, and the respirations 28. At the end of the second day, the third and last injection, consisting of 3 c.c. (ℿ 48), was made near the site of the other two injections. On the morning of the third day the nurse reported that the child had had a good night, taking nourishment well and sleeping quietly. Examination revealed a total disappearance of all visual diphtheric deposit.

The fever-chart in this case does not show a decided drop in the temperature after the injections, which corresponds with the observations of others who have used this form of treatment.

During the period dating from the use of the first injection to that of the last, forty-eight hours had elapsed, and in this time other systemic and local treatment had been used, consisting of divided doses of calomel, salol, and a mixture of seneg, ipecac, tincture of nux vomica, ammonium carbonate, with the use of a fine stream of hydrogen dioxid directed against the larynx. This plan of using the hydrogen dioxid proved more efficacious than when used with an atomizer Mercurial inunctions were also used about the neck. The child was still at the breast. Large doses of whiskey were administered at frequent intervals. No lung-complications or kidney-complications were present. Although this case may be said to have had the benefit of a mixed treatment, yet, when we take into consideration the rapidly fatal termination of this form of diphtheria, and remember that in sixty hours from the time of the first injection the child was completely out of all danger, it speaks volumes for the antitoxin-treatment. Physicians who have seen much diphtheria know of the fatality accompanying the laryngeal form, and will appreciate the fact that the patient did well with this treatment.

In consultation with Dr. Edwin Rosenthal we decided to use Behring's Fluid, No. 1, in divided doses, which was contrary to the rules of Dr. Behring's practice; yet the good and prompt results obtained by this method justified us in our procedure. On the evening of our first visit the laryngeal stenosis was so marked and threatening to the child's life that it was a question whether we should use antitoxin or intubate; but having such a powerful remedy at hand, and knowing that the Behring fluid was particularly indicated in the laryngeal form of diphtheria, we felt greatly assured of ultimate success. Sixty hours after the first injection all laryngeal complications were removed. I am indebted to Dr. Edwin Rosenthal for his wise counsel and his kindness in furnishing the antitoxin.

Dr. A. Klein performed the necessary bacteriologic examinations, and reports that the specimens taken from the child showed immense numbers of the diphtheric bacilli, with nests of streptococci and staphylococci. To him, also, I express my thanks for his painstaking labors.

Since writing the foregoing report I have had two more cases of laryngeal diphtheria which have recovered. The first was that of a female child, four years old. The characteristic picture of stenosis of the larynx was very marked thirty-six hours after the use of Behring's Antitoxin No. 2. A marked improvement in the case took place, although later on pneumonia developed, from which, however, the child made complete recovery.

The second case was that of a male child, eighteen months old. Behring's Antitoxin No. 2 was injected. Twenty-four hours later the membranes began to disintegrate and became loosened to such an extent that asphyxia was imminent. Intubation was practised, with immediate relief. Twenty-one hours later the tube was coughed away, and from then on the child has made an uninterrupted recovery. In the last two cases no other treatment was used.

A CASE RESEMBLING MULTIPLE SCLEROSIS FOLLOWING AN INJURY TO THE SKULL IN WHICH THERE WAS FRACTURE WITH MARKED DEPRESSION.

BY HAROLD N. MOYER, M.D.,
OF CHICAGO,
CHIEF OF NEUROLOGICAL CLINIC RUSH MEDICAL COLLEGE, SERVICE OF PROFESSOR LYMAN.

THE following case presents a rather anomalous picture, and one that hitherto in my experience has not occurred. S. C., a tailor, forty-five years of age, a Bohemian, with a negative family history, stated that his previous health-history has been good, and he denies venereal infection. Seventeen months ago he received a severe injury to the head, which rendered him unconscious for half an hour. He was five weeks in the hospital, and at the end of that time he was so far recovered that he made an effort to resume his occupation, but he had to give it up, owing to a rapidly increasing tremor of the right hand. Of late this has become much more marked, and with it has developed a weakness of the entire right side. There has been some pain in the right arm and through the chest. The patient calls this rheumatism, and it is for that which he seeks relief.

On the left side of the head, extending nearly to the middle line just in front of a vertical line drawn through the external auditory meatus, is an irregular depression in the skull, about one-and-one-half inches in diameter, and of a depth of from one-half to three-fourths of an inch. There is a marked tremor in the right hand, at first fine, then becoming coarse, which is aggravated by grasping objects or attempting to make voluntary movements. As a rule, when the patient is at rest there is no movement of the hand. There is apparently a slight tremor in the right leg and also of the head; but one is not quite sure if these are not transmitted from the arm. The pupils and fields of vision are normal. There is no static ataxia, no nystagmus, and no impairment of speech. Strength in the right arm is diminished one-half as compared with the left. It is impossible to determine accurately the condition of the deep reflexes because of the inability of the patient to relax the muscles. Sensation is quite normal on both the right and left sides. The patient, who is decidedly deficient in intelligence, says that he has had a tremor of the right hand for the past eighteen years, but that it was not sufficient to impair his usefulness in his occupation until after the reception of the injury and fracture of the skull described. I am inclined, from all the circumstances of the case, to think that the patient before the injury might have been slightly neurasthenic, and that this accounted for the tremor of which he speaks. Certainly since the accident he has been unable to follow his occupation.

The development of an intention-tremor after a head-injury has come under my observation only once, and in that case it was not associated with skull-fracture. It is certainly interesting to speculate as to what might have been the changes in the brain and membranes that could have given rise to the particular symptoms that we have in this case. It is also unfortunate that the want of intelligence on the part of the patient renders the clinical history somewhat obscure, and also that the condition of the deep reflexes could not be accurately determined. To my mind the most interesting feature of the case is the development of the tremor shortly after the fracture of the skull, which seemed to initiate a degenerative process closely allied in its clinical manifestations to the ordinary form of disseminated sclerosis. The fracture and depression of the skull are too far forward to bring them in direct relation with the motor area of the cortex, especially that which supplies the right arm, where the tremor first developed. There is nothing to militate against the view of an extension from the original point of a meningeal inflammation which would involve the entire motor region on the left side of the brain. In these cases, however, we should rather look for paralysis and contracture, such as follow the ordinary forms of pachymeningitis. The tremor and subsequent paralysis speak rather for a degeneration of the nerve-cells or some interruption in the conductivity of the fibers leading from the motor region.

A post-mortem examination alone would settle the exact nature of the pathologic changes underlying this case. The rarity of the clinical picture must be my excuse for presenting a somewhat fragmentary observation.

NOTES UPON A CASE OF PERFORATION OF THE UTERUS DURING CURETTAGE.

BY J. W. HICKMAN, M.D.,
OF TACOMA, WASHINGTON.

A SHORT time ago, prior to repairing a lacerated cervix, assisted by Dr. Yocom, I performed preliminary curetting, as is my custom in most cases of the kind. After scraping the endometrium with a dull curet, I introduced a sharp curet, and went over the surface again rather lightly. Then I inserted the uterine douche-tube, and in pushing it up with but a trifle of force, merely enough to be sure I was reaching every part of the fundus, it slipped through into the peritoneal cavity and was withdrawn rather quickly. At the time I was using a 1 per-cent. solution of creolin in sterilized water, and my judgment is that perhaps half an ounce, or rather less, of the fluid had time to escape into the belly. After my tube slipped up fully two inches farther than what seemed to me to be the fundus I introduced a uterine sound to be absolutely sure that I had perforated the uterine wall. I was then abundantly satisfied of what I had done. I did not irrigate the uterine cavity again, but immediately proceeded with the repair of the cervix. Upon paring away the desired amount of tissue the hemorrhage was extraordinarily profuse, and I was obliged on this account to insert the sutures upon one side before preparing the other. The cervix was very soft, so soft, indeed, that the needle passed through as easily as it would through skin and muscle.

I have curetted perhaps several hundred times, and I have rarely done a curettage more lightly; indeed I did most of the work with a dull curet. Another point is, that I did not perforate with the curet, but with the tube of the irrigator. I was afterward comforted by the fact that I had prepared my instruments and hands with scrupulous care, and that I had so far as is possible rendered the vagina aseptic. In spite of all this, I must acknowledge I suffered considerable mental shock during the remaining part of the operation. The patient recovered without an unpleasant symptom of any note. There was no acceleration of pulse or rise of temperature; simply a moderate amount of soreness over the right side of the abdomen over the seat of perforation. Even this subsided within forty-eight hours. This uterus was no doubt unusually thin-walled, likely thinner at some points than others, and, from the condition of the cervix, was certainly abnormally soft. The operation was done three months after the last delivery.

This case illustrates the fact that uterine perforation during curettage is a possible accident. In the future I shall curet no less frequently, no less thoroughly. I shall, however, be more careful than ever, if possible, to be clean; so that if the accident shall be repeated no septic material will be carried into the abdominal cavity.

In reporting this case I am simply carrying out my conviction that not merely successes alone should be reported, but accidents and failures as well. In no other way can we get at the whole truth regarding any line of surgical work.

MEDICAL PROGRESS.

Fibromyomatous Change in the Bladder.—MONRO (*Journal of Pathology and Bacteriology*, vol. iii, No. 1, p. 144) has reported the case of a commercial traveller, twenty-nine years old, who complained of pain and difficulty in micturition. From early life he had had to strain while emptying his bladder. Ten years before coming under observation he had a slight illness, supposed to be due to hepatic disturbance, associated with high color of the urine, which threw down a sediment on standing. Some time later he suffered an injury of the left buttock. For two years there had been complaint of severe pain in the left lumbar region, passing downward to the left groin and testicle, and accompanied by sickness and vomiting. These symptoms would pass off after two or three days, to recur after an interval varying from ten days to a month. In the early part of the illness clotted blood was observed to be present in the urine for two or three days. A hard, tender swelling, dull upon percussion, was found in the lower part of the abdomen. There was also a sense of tumefaction in the left lumbar and iliac regions, and at the upper part of this swelling there was felt a hard, egg-shaped body which could be rolled under the fingers. Another and more superficial body was detected in the same neighborhood. The urine was decomposing and contained much albumin, but no tube-casts or blood-corpuscles were detected. There was no difficulty in passing an instrument into the bladder. An operation was undertaken for the relief of the symptoms, in the course of which it was deemed advisable to excise the bladder. The procedure was a tedious one, as the ureters were so much dilated as to

resemble small intestines, and when they were cut across they poured out a huge volume of urine into the wound. The patient died five hours afterward. Upon post-mortem examination the bladder was found to be greatly enlarged and its wall much thickened. The inner surface suggested the appearance of a lobulated kidney, but the lobules were irregular in shape and size, some being very large. The intervening depressions were almost half an inch deep; one situated to the left of the trigone reached to a depth of more than an inch and a half. The surface of the lobules was reddish-brown in color, with a tint of blue, but presented numerous white patches, consisting of easily detachable flakes of epithelium. On microscopic examination the lobules or elevations of the mucous surface were found to consist of unstriped muscle and of connective-tissue elements. There was, moreover, an abundant infiltration of round cells, which at some parts were collected in such numbers as to suggest the commencement of small abscesses. Upon the upper end of the bladder were certain bodies that to the naked eye presented the appearance of convoluted rolls or worms imbedded in fibrous tissue. Microscopically these were found to consist largely of unstriped muscular fibers, together with fibrous tissue and numerous capillaries. The kidneys and ureters were such as are seen in fully developed hydronephrosis. The left kidney was eight and the right six inches in length. On the left side two ureters passed down from the kidney to the bladder. These were at first quite separate, but they became united to one another halfway down, though the lumen of each remained distinct from that of the other throughout its whole length, and the two opened by separate orifices into the bladder. The right ureter was single. All three ureters were much dilated, and measured while lying flat more than an inch and a half across. Connected with the pelvis were two isolated tumors that proved to be typical hard fibromata. They measured about two or three inches in length respectively. Each was ovoid in form, with a distinct capsule, and varied in hardness in different parts.

Successful Operation in Three Cases of Intra-cranial Abscess.—MURRAY (*British Medical Journal*, No. 1775, p. 9) has reported three cases of intra-cranial abscess in which relief was afforded by surgical interference. One of these has been previously reported (see THE MEDICAL NEWS, March 26, 1892, p. 352). During the three-and-a-half years that have elapsed since the operation, the patient has had no convulsions, enjoying good health, and presenting no signs of mental impairment.

The second case occurred in a girl, nine-and-a-half years old, in which symptoms of abscess of the brain developed in the sequence of suppurative inflammation of the middle ear. A disc of bone was removed with a half-inch trephine about three-quarters of an inch directly above the external auditory meatus upon the left side. The dura mater bulged into the opening and did not pulsate. When the dura was divided the brain protruded through the incision. A tenotomy-knife was then passed into the brain for about half an inch, when it entered an abscess-cavity in the temporo-sphenoidal lobe, and pus at once escaped. On further dilating the opening with a pair of sinus-forceps the pus was forcibly ejected. A drainage-tube was inserted, and the abscess-cavity thoroughly cleansed by syringing with warm boric-acid solution. The flap was sutured, and the drainage-tube brought to the surface through an opening made in the middle flap. Three ounces of pus were collected and fully half an ounce was lost. The immediate effect of the operation was very marked. The pulse, which had been 48, rose to 72, and the respiration, which had been 8, rose to 28. Two weeks later the mastoid antrum was opened and unhealthy granulation-tissue removed. During a year following the operation the child was perfectly well.

The third case occurred in a boy, eleven years old, who had had a discharge from the right ear for three weeks, with headache, vomiting, elevation of temperature, and double optic neuritis. An incision over the mastoid process exposed a subperiosteal abscess. In the failure of improvement the mastoid antrum was shortly afterward opened, and offensive granulation-tissue removed. An extra-dural abscess was found in the lateral sinus, from which about a dram of thick, offensive pus was evacuated. The sinus, covered with granulation-tissue, was collapsed and appeared to be thrombosed, and was not opened. Relief still did not ensue. It was now decided to explore the cerebellum from the seat of previous operation. On incising the dura the brain protruded, and by passing a director into the cerebellum forward and inward an abscess was opened, and from four to six drams of sweet pus escaped. The cavity was well washed out through a drainage-tube, which was brought to the surface through an opening made in the middle of the flap. The pulse rose from 20 to 100 beats per minute, and the temperature from 97° to 99.6°. Recovery was thereafter uninterrupted.

Post-neuritic Atrophy with Peculiar Iris-Reaction.—At the Eighth International Ophthalmological Congress recently held at Edinburgh GOULD reported the case of a girl, twelve years old, who had had some obscure spinal and cerebral disease and presented complete blindness, stabile mydriasis, and most intense neuro-retinitis, both papillæ being enormously swollen, the retinal vessels congested and tortuous, and often hidden by the inflamed retina and by multiple scattered hemorrhages. Six months later the neuro-retinitis had quieted down, and typical optic atrophy was pronounced, though vestiges of inflammation remained. Perception of light was absent. After the lapse of a further six months there was absolute optic atrophy of the typical white variety and stabile mydriasis, so far as related to the stimulus of artificial light, and complete blindness. The most brilliant and concentrated light thrown suddenly or continuously on the pupil failed to elicit iris-reaction or perception-response. By seating the child before an open window, however, the street in front being illumined by sunlight or diffused daylight, the pupils were found within half a minute or more to be of normal size. The parents had also noticed that when the child played out of doors the pupils were of the size usual in other people. The motion of the contraction was too slow for observation—that is, one could not positively say that the myotic movement was taking place by watching the pupils attentively. In the same way, the widening, when the patient's face was turned away from the

window and directed toward a moderately lighted room, was perhaps more rapid, but still too slow for the detection of its progression.

THERAPEUTIC NOTES.

The Treatment of Empyema in Children.—At a recent meeting of the Medical Society of London CAUTLEY (*Lancet*, No. 3727, p. 285) reported the results of an analysis of a series of eighty-four cases of empyema in children with a mortality of 16.6 per cent. Of twelve cases treated by aspiration only one died, one ruptured externally, and one discharged through the lung. Of thirty-five treated by incision and drainage seven died, while of thirty-three treated by resection and drainage six died. Five out of six cases under two years of age treated by resection died. In the large proportion of the fatal cases death was not due to anything connected with the wound. While it was admitted to be possible for small effusions to be absorbed, it was most emphatically asserted that in cases in which pus was present the only sound treatment was its evacuation. Aspiration sometimes proved useful, and might effect a cure in cases in which the pneumococcus was the primary cause. The disadvantage of aspiration was that thick effusions would not pass through the canula, and that it was impossible to remove all of the contents of the cavity, thus leaving behind a focus of irritation, and that pus rapidly reaccumulated afterward. Moreover, there were certain dangers if the operation was performed too rapidly. On the other hand, aspiration is useful in cases of urgency, in those in which the fluid is thin and sero-purulent, and in cases of double empyema. The advantages of resection are better drainage and facility for exploring the boundaries of the cavity, and for breaking down adhesions. There is also less danger of hemorrhage, and the chances of recovery are better, while recovery is more rapid. The disadvantages of resection are that it is more severe, and, judging from the mortality, ought never to be employed in children under two years of age, and there seems, also, to be greater liability to pyemia and deformity of the chest. It ought, therefore, only to be had recourse to in cases in which the tube cannot be inserted without it, and when drainage is imperfect or for the cure of an old sinus. The tube should be short, and only left in place for a short time. Empyemata do not heal by granulation from the bottom, but by expansion of the lung, ascent of the diaphragm, and contraction of the chest-wall. The tube should always be removed as soon as the discharge becomes more serous and scanty. If left in longer, it becomes a source of irritation.

Treatment of Chorea Minor With Static Electricity.—BROWER (*North American Practitioner*, vol. vii, No. 2, p. 61) has obtained satisfactory results in the treatment of eighty-eight cases of chorea minor with static electricity in conjunction with such other medication as seemed indicated in each particular case. The patient is placed upon an insulated stool, usually connected with the positive pole, and over his head is suspended a coronet with sharp points connected with the other pole. Insulation with a direct current is thus continued for about ten minutes. The patient is then subjected for about five minutes to the static breeze, using for this purpose the induced current. After the treatment is completed the patient is advised to sit quietly for about ten minutes. If possible, the treatment is repeated every day for the first week, then three times during the second week, and afterward twice a week until recovery ensues.

A machine having not less than four plates of twenty-six or twenty-eight inches in diameter is necessary.

The cases were, besides, placed under the best possible hygienic conditions. When necessary, and this was the rule, school was stopped, an hour of rest required in a darkened room at mid-day, the diet carefully regulated, and elimination by the bowels, skin, and kidneys maintained at a proper standard. Arsenic in some form and in varying amounts was administered to all, and in the most rebellious cases was pushed to its physiologic limit. Iron was given when the hemoglobin was found to be below the normal, Blaud's mass being preferred. In females with delayed puberty cimicifuga was prescribed. When there was a rheumatic history sodium salicylate or salophen was made a part of the treatment. If sleep was insufficient, sodium bromid was administered at bedtime, with or without chloral, as seemed to be necessary. The acute cases—that is, those in which the symptoms had continued for less than a month, yielded to treatment in four weeks; in the remainder the average duration was between twelve and eighteen weeks.

Ethyl Bromid as an Anesthetic in Oto-laryngologic Practice.—In a paper read before the Louisiana State Medical Society DE ROALDES had a commendatory word to say for the employment of ethyl bromid as an anesthetic in oto-laryngologic practice, particularly among children. He had successfully employed the agent for this purpose in 150 cases in the course of two years. In effecting anesthesia the agent is poured in large quantity (from one dram to two-and-a-half drams) upon an Esmarch mask, which is closely applied over the nose and mouth with a view to excluding the air. Narcosis is induced in the course of from thirty seconds to two or three minutes, and is sufficiently prolonged to permit of the performance of many short operations. Should sensibility return before the operation is completed, a few more inhalations of the anesthetic may be permitted. The advantages claimed for ethyl bromid are its rapidity of action; the short period of excitement attending its use; the induction at times of complete analgesia, with comparative integrity of the mental faculties; the rapidity with which the nacrotic effects pass off; the uninviting character of the vapor; the relative absence of unpleasant after-effects; the absence of any undesirable influence upon pulse and respiration; its portability as compared with nitrous-oxid gas.

Sodium Salicylate for Exophthalmic Goiter.—CHIBRET (*Revue Générale d'Ophthalmologie*, 1895, No. 1, p. 1) has employed sodium salicylate in the treatment of four cases of exophthalmic goiter with satisfactory results. He administered seventy-five grains in four equal parts, freely diluted with water, in the course of the twenty-four hours.

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THE SURGERY OF THE PERICARDIUM.

MODERN antisepsis has contributed largely to the establishment of well-defined surgical principles, deviation from which is only exceptionally necessary, and then only under exceptional conditions.

We have learned that certain definite lesions and morbid states, whether situated on the surface of the body or within any of its cavities, require equally certain and definite operative measures for their relief. Thus there is but one remedy for hemorrhage (ligation), but one for purulent accumulations (evacuation), but one for malignant neoplasms (excision), but one for aneurysm (occlusion), though there may be more than one mode of applying the remedy.

These remarks are prompted by the report of a series of successful operations upon the pericardium at the hands of different operators, and only recently[1] we took occasion to comment upon a case in which the performance of cardicentesis was followed by recovery. The possibility of successful surgical intervention for the relief of wounds of the heart has been suggested,[2] and as a matter of fact a case is on record[1] in which such relief was afforded in a case of incised wound of the heart.

The recent cases to which we have referred include one of suture of an incised pericardium, one of purulent pericarditis with repeated puncture followed by free incision, and one of repeated paracentesis pericardii. The first case is reported by DALTON,[2] and occurred in a man, twenty-two years old, who received a stab in the left breast, half an inch long and an inch-and-a-half above the left nipple, with little hemorrhage. There were faintness and nausea, but no abnormal physical signs. The wound was cleansed and a dressing of antiseptic gauze applied. In a short time the temperature began to rise, the pulse became accelerated, and the respiration to increase in frequency. Dulness was now manifest upon the entire left side of the chest, and there was complaint of considerable pain. Upon the removal of the dressing applied, blood and air gushed from the wound with each respiration. An incision, eight inches long, was made over and parallel to the fourth rib, six inches of which were resected. A bleeding intercostal artery was found and tied. The pleural cavity was filled with clotted and fluid blood, which was removed by turning the patient upon his left side and using a long pair of forceps armed with a sponge. When the patient was placed upon his back and the margins of the wound separated by strong retractors, a wound of the pericardium, two inches in length, was revealed. At the inner angle of the wound the pericardium was penetrated to the extent of half an inch; the remainder of the wound failed to penetrate the pericardial cavity. By means of two pairs of long forceps and with the aid of a long needle-holder armed with a sharply curved needle and catgut, the pericardial wound was with great difficulty closed by a continuous suture. The pleural cavity was thoroughly irrigated with hot sterilized water, the surgical wound closed and covered by an antiseptic dressing, a cotton bandage and a crinoline bandage, without drainage. The pericardial sac contained only the usual amount of fluid. The patient made an uninterrupted and rapid recovery.

The second case is reported by EISELSBERG,[3] and occurred in a lad, seventeen years old, who received

[1] THE MEDICAL NEWS, January 12, 1895, p. 54.
[2] Church: THE MEDICAL NEWS, October 27, 1894, p. 464.

[1] THE MEDICAL NEWS, March 18, 1893, p. 300.
[2] Annals of Surgery, vol. xxi, No. 2, p. 147.
[3] Wiener klinische Wochenschrift, 1895, No. 2, p. 21.

a wound in the pericardium, penetrating perhaps an inch. There was little bleeding, and consciousness was preserved. The wound healed without complication, and the patient was soon able to resume his work. In the course of a month, however, his health began to fail. He tired readily, appeared feverish, and suffered with dyspnea. In the course of two months more the feet became swollen, and the boy sought professional advice. He presented dyspnea, cyanosis of the lips, a frequent and arhythmic pulse, and edema of the lower extremities. The remains of the former wound were visible at the level of and two-fingers' breadth external to the left nipple. On percussion a triangular area of dulness was made out, with its right border corresponding to the right sternal margin, the left beginning at the left sternal margin at the level of the second rib and passing obliquely downward to a point about two-fingers' breadth external to the left nipple. The pulmonary percussion-note was resonant, the dulness upon the right side posteriorly beginning a little higher than upon the left. The breath-sounds were normal, except for occasional mucous râles. The heart-sounds were inaudible; nor could a friction-sound be detected. The abdomen was somewhat distended. The liver was distinctly enlarged and hard. The urine contained excessive urates, but no alubmin. There were moderate elevation of the evening temperature and considerable cough.

It was recognized that an accumulation of fluid was present in the pericardium, and for its evacuation a trocar was introduced just to the left of the sternum in the fifth interspace, giving exit to a quart of thin, purulent fluid. Distinct relief was temporarily afforded, but in the course of two weeks the puncture had to be repeated, this time evacuating slightly less fluid, and after the lapse of another week a third puncture was necessary, evacuating rather more than a quart of purulent matter. The improvement, however, was again but temporary, and resection of the fourth costal cartilage, with incision of the pericardium, evacuation of its contents and irrigation with a warm solution of salicylic acid, was practised. To prevent contamination of neighboring parts the margins of the incision into the pericardium were attached to the muscular structures, and two drainage-tubes were introduced. The patient was much collapsed after the operation, but responded readily to active stimulation. For a week the dressings were changed daily, considerable fibrinous pus being discharged. On the second day injections of iodoform-glycerin were made through the drainage-tubes, with excellent results. On the seventeenth day the tubes, which had been gradually shortened, were removed, and at the end of four weeks more the wound was firmly closed. Improvement in the general condition set in after the operation, and continued to ultimate recovery. Examination of the pus from the pericardium disclosed the presence of an organism resembling the bacterium coli communi in pure culture, but not capable of liquefying gelatin or of coagulating milk or of inducing the nitroso-indol reaction.

The third case is detailed by KIDD,[1] and occurred in a man thirty-four years old, who presented extreme dyspnea, both inspiratory and expiratory, with pallor of face, cold sweating, and anxious expression. The pulse-tension was high, and the left ventricle was hypertrophied and dilated. There was edema of the bases of the lungs, and a small pleural effusion on the right side. The urine contained a small quantity of albumin. Under treatment with morphin, trinitrin, and amyl nitrite improvement followed. After a time, however, the symptoms again became troublesome and paracentesis of the right pleura was performed, with the evacuation of three ounces of rose-colored fluid. Temporary improvement followed, but the symptoms again returned, and paracentesis had to be repeated, four ounces of fluid being on this occasion withdrawn. Several days after this operation, which afforded great relief, the patient complained of severe pain in the left side, and was much distressed. A double pericardial friction-sound was heard over the whole precordia. The application of six leeches to the cardiac region was followed by speedy relief. After the lapse of several days the patient was again suddenly seized with dyspnea and cardiac failure. It now became evident that the pericardial cavity contained a considerable effusion, and paracentesis was performed. Five ounces of blood-stained serum were removed, with great relief to the patient and improvement in the symptoms. The symptoms later again becoming alarming, paracentesis was repeated, twenty-eight ounces of fluid being removed. The patient was comparatively comfortable for two months, when his condition changed for the worse. Paracentesis was again attempted, but no fluid could be obtained. The patient gradually failed, and death finally took place. On post-mortem examina-

[1] Lancet, No. 3737. p. 275.

tion recent adhesions were found on both sides of the chest; the left pleura was adherent to the pericardium. The pericardial sac was entirely obliterated by adhesions, firm at the base, but very soft toward the apex and the lower part of the right ventricle. The pericardium was studded with numerous small hemorrhages, old and recent. The heart was greatly enlarged, the left ventricle being principally affected. The muscular tissue was rather soft. The cavity was moderately dilated. The valves were normal. The kidneys were much contracted. The capsules were thickened, but stripped easily, leaving a granular surface.

The results obtained in these cases ought to aid the judgment of the surgeon and strengthen his hand under conditions in which a policy of expectancy or non-interference is most likely, if not certain, to be attended with disastrous results.

ARTIFICIAL ANKYLOSIS FOR PARALYTIC DEFORMITIES.

THERE is no class of cripples so helpless, and for whom so little relief has been offered, as for those afflicted with deformities resulting from severe infantile paralysis. The quotation from *Timon, of Athens*, in Shakespeare: "'Tis not enough to help the feeble up, but to support him after," applies with greater force to this class of the deformed, as the instrumental relief afforded has to be maintained throughout life. In most afflictions the apparatus may be discarded at an earlier or more remote period, but not so in these paralytic cases; final dissolution alone separates apparatus from the afflicted, and the annoyance and expense connected with the purely mechanical treatment are readily to be appreciated. Any operative measure that offers a possibility of enabling such patients to dispense with mechanical appliances will be hailed with joy by the sufferers, and should be carefully considered by the profession until it has proved itself an aid to the sufferer, until it is to be regarded as entirely adequate, or, perchance, until it has advanced our surgical means to a more perfect method, of which this is but the inauguration.

The brilliant results achieved by operative measures in severe paralytic cases by DE FOREST WILLARD (Tenth International Congress, 1890, *Transactions of the American Orthopedic Association*, 1891) in the otherwise hopelessly deformed have stimulated others to a more careful study of the subject and a more earnest effort to assist these otherwise incurable cases. The labors of GIBNEY, BRADFORD, YOUNG, MCCURDY, and others have all demonstrated the importance of surgical measures in restoring to some degree of usefulness persons who would otherwise be doomed to spend their lives upon the floor or the bed.

In recent numbers of the *Provincial Medical Journal*, December, 1894, and January, 1895, ROBERT JONES, F.R.C.S.E., has proposed and has reported success in producing artificial ankylosis of the knee-joints and ankle-joints in paralytic flail joints. His purpose was to try to transform the flail limb into a member approximating as closely as possible to the splint which he wished to discard. The procedure consists in ankylosing the knee and partially ankylosing the ankle-joint. This has been performed in twenty-six cases, fifteen of which are published. The operation consists in opening the joint, and, with a scalpel or sharp gouge, peeling the superficial area of cartilage off the whole articulation in the case of the ankle, and gouging the bone in the case of the knee, keeping the joint completely at rest for some weeks subsequently, and for a long period fitting the limb with a simple apparatus which will enable the patient to walk without throwing a strain upon the newly fixed joints.

In operating upon the knee an incision is made across the front of the joint, covering fully half its circumference, and curved so as to pass the lower end of the patella. The flap is turned up and all the vessels ligated. The crucial ligaments are allowed to remain intact. Deep and superficial sutures are used to close the wound, no drainage-tube is employed, and an antiseptic dressing encloses the wound.

In the ankle-joint in old cases of paralytic equinovarus the joint is opened by an incision immediately in front of the external malleolus, following the line of the ankle-joint. Several grooved portions of the articulating cartilage are removed, including fragments of the articulating surfaces of the tibia and fibula. In some cases the astragalus is more easily reached from behind. The incision is made along the external border of the tendo Achillis.

No mishap attended the operation in any of the series; union has occurred by first intention, attended by little or no pain. Two separate splints are employed to fix the knee and ankle. After the operation it is necessary in all cases to prolong for a considerable period the use of apparatus, as it takes

a considerable time for the joints to become so securely fixed as to bear the bodily weight and the ankle-lever strain.

The production of partial ankylosis in paralytic cases is a new suggestion, and, judging from the reports, an excellent one in selected cases. The number of cases in which such operation will be necessary will be comparatively small, especially in this country. Most American patients prefer apparatus to operation, and especially since the sudden changes of an unstable new country do not preclude the possibility of the poor of to-day becoming rich in the near future. The operation of artificial ankylosis is an operation for the poorer classes. In this class of cases excision of the knee-joint and ankle-joint has been seriously considered by AP MORGAN VANCE and others, and excision in order to secure a stiff joint, or arthrodesis, as it is styled by ALBERT, has been performed with excellent results by WINIWARTER, LESSER, J. WOLFF, RYDYGIER, and ALBERT. The operation of artificial ankylosis would, in those cases requiring such an operation, be the preferable procedure.

EDITORIAL COMMENTS.

The Homeopathic Department of the University of Michigan.—An interesting state of affairs exists at the University of Michigan. It appears that in 1875 the Legislature voted the establishment of a chair of homeopathic materia medica and therapeutics, and one of the practice of medicine, the students who listened to these professors attending also lectures on the remaining subjects by the regular professors, and being duly examined by these. As time went on the clinical professors in the Department of Medicine and Surgery objected to teaching "homeopathic" students, and additional "homeopathic" professors were added, to the number of five, the "homeopathic" students continuing to receive instruction in chemistry, physiology, bacteriology, hygiene, physiologic chemistry, physics, pathology, histology, etc., with the students of the Department of Medicine and Surgery. In time a hospital was built for the University, and subsequently also a homeopathic hospital. During the twenty years from 1875 to 1895 the homeopathic department has graduated 309 students at a net cost of $154,962, about $500 per capita. There are at present but seventeen students in the department, and of these twelve receive all of the instruction, with the exception of lectures in materia medica, from the regular faculty. The cost per student in the department of regular medicine equals $169. To reduce the double cost of two faculties, each with its own hospital, and the attendant loss, it has been suggested that the homeopathic school, as a department, be abolished, and that a professor of homeopathic materia medica and therapeutics be appointed. The dean of the homeopathic department proposes amalgamation. He would allow each "school" a professor of materia medica and one of the theory and practice of medicine, and would divide the operative chairs equally between them (thus surgery and obstetrics should go to one school, and gynecology and ophthalmology to the other); the rest of the chairs should be single, and some of the "useless" chairs should be abolished. We doubt if any such amalgamation is possible, although we see no objection to the incorporation of a course of lectures on homeopathy in the regular curriculum. There could be no better way of showing the good, if there be any, as well as the fallacies, the inadequacies, and the deficiencies of so-called homeopathic therapeutics. Such a plan is pursued in Germany, where homeopathy as an organized body does not exist. It is the privilege of the true physician to use any legitimate remedy or agency, whatever its source, that will relieve suffering or cure disease. The practice of the sectarian is limited to the applicability of his dogma.

Anti-Choleraic Inoculation in India.—There still appears to be some uncertainty as to the real utility of inoculations in the prophylaxis of cholera, although such evidence as is attainable rather supports the usefulness of the procedure. In the discussion of the subject at the recent Indian Medical Congress HAFFKINE (*British Medical Journal*, No. 1778, p. 219) related that the total number of persons thus treated in India is 32,166. Two-thirds of this number were subsequently inoculated with the second vaccine from five to twelve months after the first. During 1894, 3478 persons in Calcutta were inoculated. In thirteen houses containing 181 people cholera appeared from two to one-hundred-and-eighty days after the inoculation had been made. The number of persons inoculated in these houses was eighty-five, and among them one case which was fatal occurred, a percentage of 1.18. Among the ninety-six non-inoculated persons there were fifteen cases of cholera and eleven deaths, or 15.63 per cent. of cases and 11.63 per cent. of deaths respectively. In August, 1894, an epidemic of cholera broke out among 872 soldiers in Cawnpore. Seventy-five of these had been inoculated thirteen months previously. Among the whole number nineteen cases occurred, with thirteen deaths, all among the non-inoculated. In Lucknow there were among 640 non-inoculated persons 120 cases (18.75 per cent.), with seventy-nine deaths (12.34 per cent.), while among the 133 inoculated there were eighteen cases (13.53 per cent.), with thirteen deaths (9.77 per cent.). In no instance were the injections followed by unpleasant results. Observations were made of 2235 persons in Calcutta, Cawnpore, and Lucknow. Of this number, 500 were inoculated, and 1735 not. Among the former there were twenty-one cases of cholera (4.2 per cent.), with nineteen deaths (3.8 per cent.), while among the latter there were 174 cases (10.63 per cent.), with 113 deaths (6.51 per cent.). These results would appear to justify a continued use of the injections and to warrant the hope that we have really acquired a powerful means of mitigating the severity and reducing the mortality of one of the gravest plagues transmitted from antiquity.

The Treatment of Typhoid Fever—through the Newspapers.—Readers of THE MEDICAL NEWS may recall that in the

numbers for March 3 and March 17, 1894, we took issue with the methods of Dr. J. E. Woodbridge in advocating, in a paper published in the *Journal of the American Medical Association*, the treatment of typhoid fever by means of whose nature no mention was at first made, but which was, however, given in a paper read four months after the first. Dr. Woodbridge's position was at the time defended and its own course justified by the *Journal*. One or more articles upon the same subject have appeared since our original comment, and quite a warm discussion has waged around the method of treatment. The last word on the subject comes from a lay journal, the *Youngstown Daily Vindicator*, which in its issue of February 4, 1895, devotes a large part of a column under the heading

"CAN BE CURED.
INTERESTING PAPER PRESENTED
BY A PROMINENT
PHYSICIAN,
TREATMENT OF TYPHOID FEVER.
DR. JOHN E. WOODBRIDGE GIVES
THE RESULTS OF HIS EXPERIENCE,"

to liberal quotations from "the current number of the *Journal of the American Medical Association*," from "a paper read by Dr. John E. Woodbridge, of this city, on the treatment of typhoid fever, containing reports of many cases of a serious character successfully treated. The paper was read by Dr. Woodbridge at the meeting of the Mississippi Valley Medical Association in Hot Springs."

Several formulæ and other details are given. We have no word of comment, but are deeply moved in admiration of the judgment and discrimination, not to speak of the local pride, of the home newspaper in thus spreading the fame of one of its distinguished fellow-citizens.

The Nostrum-Syndicates, the Law, and the Newspapers.—A bill is pending before the Tennessee Legislature to compel all makers of patent medicines to print the formulas of the remedies, against which the *Chattanooga News* thus protests:

"We desire to enter here our most emphatic protest against this measure. It means a loss of hundreds of thousands of dollars to the State. No reputable manufacturer would think of giving away his formulas in this manner, so that anyone who chooses could take advantage of the legitimate secrets of his trade. Before they would divulge these secrets they would withdraw entirely from the State.

"The result would be that the druggists, a large part of whose trade lies in patent medicines, would be deprived of a principal source of their income, the railroads would lose immense amounts of freight, and the newspapers would be almost ruined.

"The advertisements of patent and proprietary medicines constitute a very large part of every newspaper's business, and many of the country weeklies would have to suspend publication if it were not for this patronage.

"The day has passed when the best physicians refuse entirely to prescribe these remedies. Most of them find occasion at times to use them in their practice. The really skilful doctor is not injured.

"The people are not imposed on to any large extent. They soon discover what is fraudulent and what is of genuine merit. The bill can help no one but physicians who have not the ability to command practice on their own merits, but who hope by this means to compel patients to call on them."

It is not often that a bribed editor is thus honest and frank. We reproduce the "argument" to illustrate the difficulties that hamper medical progress in our country and that throttle legislation and reform of the outrageous abuses which both the profession and the people endure.

The "Special Edition" with Portrait and "Write-up."—Such, we believe, is the newspaper jargon for expressing a method of uniting journalistic and professional "enterprise." According to an illustration before us as we write, the price of a "write-up" of fifty lines, with "scetch" (sic) and portrait of the doctor, in "the quarter-century anniversary edition of the Indianapolis *News*" is $35.00. We have received during the past year a large number of newspapers from all over the land, containing numerous "scetches" and "write-ups" of all the local physicians, sandwiched between the ditto ditto (as Artemus Ward would say) of the no less enterprising butcher, baker, and candle-stick maker. We suppose that with the advertisements of *cancer-cures* and *Wizard Kings of Pain*, and *Lost Manhood Restored*, these respectable, most respectable, members of the American Medical and many other Associations thus naturally contribute to the support of journalistic and medical ethics. No wonder at the professional opposition to the Code of Ethics! The "write-up," as if out of the kindness of heart, and from local patriotism of the newspaper editor, that is to say, the reading-notice in the editorial columns, costs more than a plain, straightforward "ad." in the other columns. Now the Code of Ethics compels the "hustler" to pay the higher price for the reading-notice. No more effective ground for hatred to the Code could be imagined, and we therefore suppose we shall have a subacute attack of codephobia of especial virulence in Baltimore next May.

Argon is the name finally given the new element or gas discovered in the atmosphere by Lord Rayleigh and Prof. Ramsey. The word is derived from ἀγ priv., and ἔργον work, and is thus allied to the old medical words *anergia* and *anergic*, and is given to the substance because of its remarkable inertness. Argon is soluble in water to the extent of four in one-hundred volumes. Its density is 20, its atomic and molecular weight 40. It condenses to a colorless liquid at —128.6° C., and under a pressure of 38 atmospheres and at a lower temperature it freezes to a crystalline mass resembling ice. Its freezing point is —189.6° C., its boiling point —187°. Professor Crookes concludes that perhaps two new elements are contained in the substance, as it yields two distinct spectra. There are many physiologic and medical questions suggested by its presence even in such small proportions as 1 : 125 or 1 : 200 in our atmosphere, but so far these exist only as queries half-formed and wholly unsolved.

Medicine or Manslaughter?—The lay-public is justly exercised over the report, purporting to come through the engineer (an English officer) upon the Chinese vessel the *Yang Wai*, that after an engagement with a Japanese man-of-war the hopelessly wounded were at

once put to death by the surgeons in charge, by means of prussic acid. Were the surgeons Englishmen or Americans, and is the report true? Can any one send us reliable information?

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF GREIFSWALD.

Meeting held November 3, 1894.

NOTE.—The account of this meeting is published at this late day as the discussion seems to emphasize in a greater degree than has been done elsewhere the importance and the necessity of joining systematic local measures with the specific treatment.

MOSLER reported that from October 1, 1893, to October 1, 1894, 351 cases of diphtheria had been treated at the clinic at Greifswald (287 children and 64 adults). Among these there had been only 40 deaths (39 children and 1 adult). At the medical clinic held at the University Hospital 313 were treated, with 46 deaths (15.5 per cent.). Of these last a number were sent to the hospital on account of the severity of the disease, and among them many arrived moribund. It was not until August, 1894, and when the epidemic was disappearing, that Behring's treatment was employed. Thirty cases were treated by this method, with remarkably good results.

It was said that expectations for the serum-therapy must not be too much exaggerated. It is not a panacea for all cases of diphtheria. Its action is uncertain in those cases in which the diphtheria-germs are associated with other pathogenic microörganisms, such as the streptococcus. However, in these mixed cases the suppression of the effects of the diphtheria-poison will perhaps have a good effect. It remains for the physician to determine what remedies shall be used in connection with the serum-therapy in these cases of mixed infection.

BÖRGER reported 30 submitted to the serum-therapy, of which only two had died. Five had tracheotomy performed, and of these one had died. The reports for the same months of the preceding year, however, gave equally good results, the average mortality being 15.5 per cent., and this, of course, was previous to the introduction of the serum-therapy. It shows the skill with which cases of diphtheria were treated in this clinic.

LOEFFLER stated that the bacillus of diphtheria does not usually penetrate the organism. Since it only develops locally and produces its poison, it would seem to be advantageous to destroy the colonies where they exist. The local treatment of diphtheria is, therefore, logical.

In cases of sore-throat caused by other pathogenic microörganisms than the diphtheria-bacillus the serum has no effect. In cases in which the diphtheria-bacillus is associated with other microörganisms local treatment is equally indicated. Then, too, the local treatment has the advantage of preventing the spread of the pathogenic agents.

LOEFFLER said he had found a large number of antiseptics capable of destroying cultures of the diphtheria-bacillus in twenty seconds, but in most cases it is not possible to submit the patient to the action of these remedies during so long a period. He had, therefore, attempted to find an agent of still more rapid action. After many trials he had found that a mixture of 60 parts of alcohol, 36 of toluol, and 4 of solution of ferric chlorid destroyed these cultures in five seconds. Experiments made on animals with this mixture yielded excellent results. During the last epidemic many physicians had applied this remedy, and among 70 cases not a single death resulted. At the clinic of Mosler 36 cases were treated, with 5 deaths, but these cases were too far advanced to be benefitted by local treatment.

When the treatment is properly applied in cases of diphtheria in the first twenty-four hours the temperature falls one or two degrees, the pulse becomes slower, and the general condition is improved as much as when serum-therapy is employed. When the treatment is begun early paralysis never follows.

When the remedy is energetically applied it causes a burning pain. To prevent this, Strübing has advised the addition of menthol. The following mixture is less painful:

Menthol	10 parts.
Toluol	36 "
Alcohol	60 "
Ferric chlorid	4 "

Hydrogen sulphid is produced in the pharynx in putrefactive processes, and this precipitates the ferric chlorid in the form of iron sulphid, lessening the effect of the mixture. In these cases it is best to substitute two or three c.c. of creolin or metacresol for the ferric chlorid. These mixtures have a very energetic action on all other pathogenic microörganisms, as well as on the diphtheria-bacillus. All sore-throats may be treated by them with good results.

STRÜBING said that in one epidemic one-fourth of the cases were not true diphtheria, but pseudo-membranous sore-throat, produced by other organisms, and particularly by the streptococcus. It is very interesting to note that under the same conditions in which true diphtheria develops we find also an extraordinary number of "diphtheroid" sore-throats due to other microörganisms. These cases, usually of a very benign character, are sometimes exceedingly malignant. If the microörganisms present penetrate into the tissues and bloodvessels the streptococcus multiplies there, and the patient succumbs similarly to cases of streptococcous septicemia. In certain conditions these "diphtheroid" sore-throats become putrid, as in true diphtheria. The submucous tissues become infected and cause phlegmons of the neck. Unfortunately serum-therapy is powerless against the streptococcus, and the physician must resort to local treatment.

If a case of diphtheria is seen on the first or second day, it is not necessary to employ the anti-diphtheric serum, for the "Loeffler mixture" is sufficient to check the course of the disease. If the disease is more advanced, the serum should be employed, but even the serum may be powerless in the presence of a mixed infection; so the local treatment should also be employed. The "Loeffler mixture" is the most efficient local application of any that have been used up to the present time. As its use, however, is attended with pain, so soon as the disease is controlled and the temperature returns to normal, it is better to substitute other remedies, especially mercuric chlorid. It must not be thought that the "Loeffler mixture" is free from objections. Its use is

always attended with more or less pain, and, if applied too strong, it injures the mucous membrane.

It is impossible to give a general formula for repeated local treatment in all cases. One must be guided by the extent and duration of the disease. If the case is a very severe one, the mixture should be applied on cotton tampons, eight or ten applications being made at one sitting, and the sittings repeated every three or four hours till the fever disappears.

A serious obstacle to the local treatment is the extension of the lesions to the nasal passages or the respiratory passages. The applications cannot then be employed, or, if they could, the mucous membrane of the larynx and nose will not tolerate this powerful remedy.

FENDERICH reported 191 cases of diphtheria treated at the surgical clinic at the University from April 1, 1887, to April 1, 1894. This was, of course, before the introduction of serum-therapy. Of the total number 114 (57 per cent.) died; in 153 cases (77 per cent.) tracheotomy was performed, and 100 of these died. In the last year alone tracheotomy had been performed in 96 cases, of which 25 had recovered.

BEUMER reported that in one house in which there were five cases of diphtheria, two being fatal, he had treated the sixth child with serum, and it was not affected with diphtheria. Some days later, in an asylum containing 17 children, 3 having contracted diphtheria, the others were vaccinated with serum; and, in spite of the bad sanitary conditions present, none of them developed diphtheria.

As to the production of albuminuria after the injection of the serum, Loeffler states that the excretion of toxins by the kidneys causes a lesion of these organs, which does not manifest itself at once, because the kidneys can bear a certain amount of the poison.

PEIPER stated that in a case of true diphtheria treated by injections of serum, albumin did not appear until the end of two weeks, and lasted only four or five days. No casts were found in the urine. Three weeks after the injection the child had an ocular paralysis.

LOEFFLER said that side by side with the true diphtheria-bacillus which is found in the mouths of patients recovering from diphtheria, the pseudo-diphtheria-bacillus is also found. The latter has little pathologic importance except that it is an attenuated form of the true bacillus. We do not know if the true form which has lost its virulence can be made to regain it. However, in individuals in perfect health the virulent form has been found, and in this way the disease may be disseminated. These virulent bacilli are found in the mouths of persons who have had diphtheria for a variable time after recovery. For this reason the German committee proposed at the Congress at Budapest not to allow children that have had diphtheria to return to school until bacteriologic examinations of their mouths no longer disclosed the presence of diphtheria-bacilli.

ABEL reported a series of researches on the immunizing power of the blood-serum of persons recovered from diphtheria. This power has only been proved to exist for six or seven days after recovery. On the other hand, it has been found to exist in some cases for eight or ten days, and in a few cases for some months. This shows that a first attack of the disease does not absolutely prevent a second.

The blood of persons who, according to their statement, have never had diphtheria has also been examined. In most cases it had the power to protect guinea-pigs against diphtheric infection.

Wasserman has already shown that this property of human serum becomes more pronounced with the progress of age.—*Le Bulletin Médical*, December 2, 1894.

CORRESPONDENCE.

SYMPHYSIOTOMY.

A Personal Protest by Dr. Henry J. Garrigues, of New York.

To the Editor of THE MEDICAL NEWS,

SIR: In the number of THE MEDICAL NEWS issued on January 12th Dr. W. Winterberg, of San Francisco, Cal., in an article on symphysiotomy, writes: "The upper limit is placed at 88 mm. by the majority of operators, while Dr. Garrigues advocates 95 mm. in a flat, and 11 cm. in a generally contracted pelvis, on the ground that the latter offers the same resistance as a flat pelvis with a conjugate 13.5 mm. (0.5 inch) shorter.

"This proposition of Dr. Garrigues is unintelligible. It certainly is paradoxical to talk of a generally contracted pelvis with a conjugata vera of 11 c.m. The normal length of the true conjugate is 11 c.m., therefore, with one diameter perfectly normal, a *general* contraction cannot be said to exist in such a pelvis."

Before designating my sayings as *unintelligible* and *paradoxical*, Dr. Winterberg should have ascertained what I said. Three times I have addressed the profession on the subject of symphysiotomy, namely, in the *American Journal of the Medical Sciences*, March and April, 1893; the *American Journal of Obstetrics*, November, 1893; and the *Medical Record*, November 10, 1894. In all these publications I place the upper limit for symphysiotomy at 3½ inches, 9 cm., in the flat pelvis, and at 4 inches, 10 cm., in the generally contracted.

I do not know with what right Dr. Winterberg adds 5 mm. to the first measure and 10 to the last.

Morisani places the upper limit at 88 mm.; 3½ inches are 89 mm.; and since nobody can measure either 1 or 2 mm. in a pelvic diameter of a living person, there is practically no difference between the upper limits in the flat pelvis as stated by me and the majority of operators, and it is better to have round, approximately correct figures, such as 3½ inches and 9 c.m.

As to the normal antero-posterior diameter of the superior strait, it is 11, or, according to some authorities, even 11.5 cm. One of 10 cm. is, therefore, abnormally short, and when at the same time the transverse diameter is too short the pelvis is generally contracted. Just as it is a rule, followed by the best obstetricians in regard to the lower limit for the application of the obstetric forceps, to demand one centimeter more in the length of the antero-posterior diameter of the brim of the *generally* contracted pelvis than of the flat pelvis, I think it proper to make a similar addition to the true conjugate in placing the upper limit for symphysiotomy.

This is of particular importance to us here in New York—and according to Dr. Edward Reynolds (*Transactions American Gynecological Society*, 1892, xvii, p. 124), the same applies to Boston—as the form of narrow

pelvis we have to deal with nearly always is the generally contracted pelvis and not the flat, which is the common form in Europe.

To this must be added that the average weight of American children is ½ pound heavier than that of French children, more than ⅔ pound heavier than that of German children, and even 1½ pounds heavier than that of English children, taking Lusk, Tarnier, Spiegelberg, and Playfair as representative authors for their respective countries.

There seems, therefore, to be good reason for American obstetricians to place the upper limit for symphysiotomy somewhat higher than they do in Europe.

There are other points in Dr. Winterberg's article to which I would take exception, but as I have no inclination to begin a controversy—and this would draw the attention away from the main point—I shall limit myself to this protest against being misquoted and then told my teaching is unintelligible and paradoxical.

Respectfully,

HENRY J. GARRIGUES.

NEWS ITEMS.

Medical Coeducation in Paris.—The medical faculty of the University of Paris opened its doors to women in 1868, but at first only a very few availed themselves of the privileges thus offered. In 1878 the number in attendance was 32; during the next ten years (1878–'88) it increased to 114, and is at present 183, of whom the great majority (167) are Russians. The remainder are Poles, Roumanians, Servians, Greeks, and Scotch, and only one German. Many of them, chiefly Russian, have been through the gymnasium; others have acquired a more or less thorough knowledge of literature, history, the natural sciences, and philology in such secondary schools as were accessible to them. As foreigners, they must all be examined in Latin and Greek before admission, and be able to translate passages from the easier classical writers, Cæsar and Xenophon, at sight, and to analyze them grammatically. The courses of study are pursued conjointly with the young men, and this association, so far from producing a demoralizing effect, tends to elevate and refine both sexes. One lady declares that during an experience of three years in the clinique, the auditory, and the dissecting-room she has never observed that the presence of young ladies occasioned the slightest improper word or act on the part of their male colleagues. Most of the women who practise medicine in Paris are married. "Model wives and happy mothers, they nevertheless find time to devote to their profession." The professors and directors of the hospitals praise the conscientiousness and diligence of the women, and acknowledge them to be, both in general intelligence and in special knowledge, fully equal to the men. The latter also admit the truth of this statement, and assert that they ought to be even superior in these respects, since they are not compelled to waste their time in cafés and cabarets. It is still difficult for some of the older members of the faculty to reconcile themselves to the new state of things.—*New York Evening Post.*

Meetings of Philadelphia Medical Societies:

	Meets.	Next meeting.
Academy of Surgery,	1st Monday of month, Oct.—June.	March 4
College of Physicians,	1st Wednesday of month, Sept.—June.	March 6
Section of Gynecology,	3d Thursday of month, Oct.—June.	March 21
Section of Ophthalmology,	3d Tuesday of month, Sept.—May.	March 19
Section of Orthopedic Surgery,	3d Friday of month, Oct.—April.	March 15
Section of Otology,	1st Tuesday of month, Oct.—May.	March 5
Section of Surgery,	2d Friday of month, Oct.—May.	March 8
County Medical Society,	2d and 4th Wednesdays of month, Sept.—June.	March 3
Neurological Society,	4th Monday of month, Oct.—April.	March 25
Obstetrical Society,	1st Thursday of month, Sept.—June.	March 7
Pathological Society,	2d and 4th Thursdays of month, Sept.—June.	March 14

Appointments at Jefferson Medical College.—Dr. William Thomson, who has been Honorary Professor of Ophthalmology, has been given the full professorship. Dr. Howard Forde Hansell, who has been Chief Clinical Assistant, has been made Clinical Professor of Ophthalmology.

Dr. R. Meade Bolton, Director of the Bacteriological Laboratory at Johns Hopkins University, has been made Chief of the Division of Pathology, Bacteriology, and Disinfection of the Philadelphia Board of Health.

BOOKS AND PAMPHLETS RECEIVED.

U. S. Department of Agriculture. Bureau of Animal Industry, Bulletin No. 7. Investigations Concerning Bovine Tuberculosis, with Special Reference to Diagnosis and Prevention. Conducted under the Direction of D. E. Salmon, M.D., Chief of the Bureau of Animal Industry. Washington: Government Printing Office, 1894.

Hypertrophy of the Pharyngeal or Luschka's Tonsil. By E. Fletcher Ingals, A.M., M.D. Reprinted from the Journal of the American Medical Association, 1894.

Apex-Catarrh. By Howard S. Straight, A.M., M.D. Reprinted from the Medical Record, 1894.

Total Extirpation of the Uterus by a New Method. By Albert H. Tuttle, M.D., S.B. Reprinted from the Boston Medical and Surgical Journal, 1894.

The Non-operative Methods of Treating Anal Fissure or Irritable Ulcer of the Rectum. By Lewis H. Adler, Jr., M.D. Reprinted from the Therapeutic Gazette, 1894.

Intraligamentous and Retroperitoneal Tumors of the Uterus and its Adnexa. By William H. Wathen, A.M., M.D. Reprinted from the Transactions of the American Gynecological Society, 1894.

A New Apparatus for Administericg Anesthetics in Face and Mouth Operations. By Edmond Souchon, M.D. Reprinted from the Journal of the American Medical Association, 1894.

Transactions of the American Ophthalmological Society. Thirtieth Annual Meeting, Washington, D. C., 1894. Hartford: Published by the Society, 1894.

Report on Typhoid Fever in the District of Columbia, Submitted by the Medical Society of the District of Columbia to the Committee of the District of Columbia of the U. S. House of Representatives, June 14, 1894. Washington: Government Printing Office, 1894.